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MASTER'S THESIS

**THE USE OF CAPITAL BUDGETING PRACTICES
IN MACEDONIAN COMPANIES**

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INTRODUCTION

Corporate finance is a field of finance that involves all financial aspects related to a company. Dealing with the capital structure of the company, the sources of funding, the actions that managers take to increase the value of the company to the shareholders, and the techniques and analysis used to allocate financial resources are all in the domain of corporate finance. The primary goal makes sure that money is used in the best way and maximizes the shareholders' wealth by a combination of short and long term planning.

Widespread opinion among academics and researchers is that a company's future success, growth and survival ultimately depends on the efficient utilization of available resources and getting its current investment decisions right (de Andres, et al., 2015). According to Brealey, Myers and Allen (2011), what counts is the investment decision not the financial policy. They stated that even it's not optimally financed, a good investment promises good business, but a bad investment will be a wrong decision even with the best financing policy.

Investment decision is a financial operation which entails the company to invest efficiently its current financial resources in long term profitable projects. Nowadays companies tend to make decisions worth millions of Euros in capital improvements, such as expansion of plant operations, investments in technological improvements, purchasing new machinery and permanent assets. Such crucial decisions can lead to company insolvency or even bankruptcy to a certain extent, if investment decisions are made without thorough understanding of capital budgeting practices (Nyambura, 2014). That's why the carefully planning of investments to attain the company's objectives is an imperative for the company (Vishvanath, 2007).

Capital budgeting techniques (hereinafter: CBT) are utilized by most of the companies to evaluate the investment projects. The definition stated by Brewer, Garrison and Noreen (2011) describes capital budgeting as an investment analysis made by financial managers to identify which investment opportunity among those available has the best future cash flow return. Shim and Siegel (1994) further define the capital budgeting as the best option to make financial decisions for long-term investment projects in a company. According to Crouhy, Jarrow & Turnbull (2008), capital budgeting decisions are of crucial importance for the overall growth of a company as these decisions commit the limited productive resources of the company to its production process.

Managers in a company are faced with several investment opportunities from which to select a few to undertake. The capital budgeting decision-making process is of vital importance, and should be carefully considered because the investment decision makes

sure that the investment opportunities are utilized to their best potential. Capital budgeting helps managers to choose and invest its funds in the project which is best suitable for the company, in order to maximize shareholder's wealth. According to White, Miles and Munilla (1997) the adoption of the right capital budgeting processes and techniques leads to decisions that increase the resource base of the company while improving its ability to serve its members and evaluate the effectiveness of its investments.

Singh, Jain and Yadav (2012) classify the capital budgeting techniques into two categories, as discounted cash flow techniques and non-discounted cash flow techniques. Discounting techniques employ only incremental cash flows resulting from the selected investment project and explicitly take into consideration the time value of money, while non-discounting capital budgeting techniques are calculated without taking the time value of money into account (Singh, et al., 2012).

1.1 Statement of the Problem

Capital budgeting practices and tools in evaluating investments have been of great interest to researchers and academics for many years. The major part of the research studies investigating capital budgeting was carried out in high developed countries, mainly in Western Europe, North America and Australia, e.g. France (Brounen, de Jong & Koedijk, 2004), Germany (Brounen et al., 2004), the UK (Brounen et al., 2004), the Netherlands (Hermes, Smid & Yao, 2007), Sweden (Sandahl & Sjögren, 2003), Australia (Truong, Partington & Peat, 2008), Canada (Graham & Harvey, 2001), and the USA (Graham & Harvey, 2001).

Central and Eastern European (hereinafter: CEE) countries and Asian countries are categorized as less developed countries and research studies dedicated to capital budgeting are definitely less common in these countries. One of them is the study by Andor, Mohanty and Toth (2011) which examines the capital budgeting practices of ten CEE countries e.g. Slovenia, Poland, Croatia, Bulgaria, Slovakia, Czech Republic, Hungary, Latvia, Romania, and Lithuania, and the study by Batra and Verma (2017) which investigates capital budgeting techniques in India

The empirical use of capital budgeting techniques in Macedonia has not been investigated yet. Historically, culturally and geographically most connected to Macedonia are the studies on CBT carried out in Serbia by Barjaktarovic, Djulic, Pindzo and Vjetrov, and Croatia by Dedi and Orsag (2007). The use of capital budgeting techniques in Macedonian companies, appear to be interesting because of the historical conditions of this country. Macedonia experienced a transition process and underwent several external shocks and political transformations which resulted in profound changes in the economy. The

economy opened to foreign capital, and now Macedonian companies have to be competitive not only at the local but especially at the global market. The competition demonstrates itself in investments taken on by the companies which must be effective in order to take a place at the global market. The achievement of this requires good investment ideas and an appropriate use of the capital budgeting appraisal techniques of these investment ideas. These evaluation techniques are extensively and frequently used by companies in the highly developed countries (Wnuk-pel, 2015).

Financial theory often favors and thus recommends sophisticated capital budgeting techniques, like the net present value and internal rate of return. While, unsophisticated techniques which are simpler and do not take into account the time value of money like the payback period, are not recommended by literature (Brealey, Myers & Allen, 2011; Lumby & Jones, 2003; Ross, Westerfield & Jaffe, 2005; Smart, Megginson & Gitman, 2007). Early research shows that there is still a discrepancy between the theory and practice (Schlegel, 2015). The practical use of the capital budgeting techniques deviates from what is prescribed by normative theory (Brounen et al., 2004; Danielson & Scott, 2006; Graham & Harvey, 2001; Sandahl & Sjögren, 2003). One possible reason for the gap between theory and practice is the goal incongruence between management and shareholders together with the information asymmetry (Hartwig, 2012). Moreover, according to Holmen and Pramborg (2009) sophisticated capital budgeting techniques are costly to apply in the presence of capital market imperfections, and therefore financial managers prefer rules of thumb like the payback period technique. Management's not-sophistication is also considered to be another possible reason.

When taking into account that investment decisions are made by individuals, it is far from a mistake to presume that the managers' personal preferences may determine the capital budgeting decision. Environmental conditions are not excluded (Mendes da Silva, 2018). A wide range of factors like size of the company, profitability, leverage and chief financial officer's (hereinafter: CFO) characteristics have an influence on the choice of capital budgeting techniques in a company.

This research study focuses on examining evidence on the formal usage of known appraisal techniques in Macedonian companies, the factors that are associated with their selection and if there is a gap between the theory and practice.

1.2 Purpose and Goals of Research

Over the years, international and national studies have been conducted on capital budgeting techniques. For instance, Blazouske, Carlin, & Kim (1988) study of capital

budgeting practices in Canada. Hartwig (2012) using evidence from Swedish listed companies examined the determinants of capital budgeting techniques in this country.

This study is different from the previous literature and its aim is to bridge the gap by providing evidence regarding the capital budgeting techniques applied by Macedonian companies. Concerning the culture, economic development, institutions and significance of capital market for the economy, Macedonia differs from countries with a higher degree of development where most of the research was conducted.

The purpose of this master thesis is to extend the knowledge and understanding of the capital budgeting techniques, to contribute to better capital budgeting practice and thus to better decision-making in Macedonian companies. It intends to explore whether the behavior of the financial managers in Macedonia is in agreement with finance and management accounting theory or if there is a gap between theory and practice or not.

To achieve the purpose of the study this thesis firstly reviews the theoretical literature on capital budgeting techniques. Then it examines the current state of use of CBT in Macedonian companies and the factors that are associated with their selection. Finally the analysis compares the generated results to a study of Continental European companies (Brounen et al., 2004) and explains why and where there are the differences.

1.3 Research Questions and Hypothesis

In accordance with the objectives of the thesis, this study points out the following research questions particularly:

- To what extent are the CBTs in Macedonia actually used, and is there a gap between the theory and practice?
- Are the capital budgeting techniques used in Macedonia similar to the ones used in their counterparts in Continental Europe?
- What factors determine the use of CBT?
- Are there any differences in using of CBT between companies of different characteristics?
- Are there any differences in using of CBT between companies with different chief financial officer's characteristics?

This research study completes the gap in the literature concerning the use of capital budgeting techniques by verifying three hypotheses:

H1: The overall use of the CBTs is less extensive in Macedonia than in Continental Europe.

H2: Company characteristics, such as size of the company, sector, listed on the stock exchange, industry, profitability, leverage level, availability of cash and foreign sales have a positive correlation with the frequency of CBT selection.

H3: Chief financial officer's characteristics, such as age, education and tenure have a positive correlation with the frequency of CBT selection.

1.4 Importance and Scope of the Study

This master thesis contributes to the research area as it studies the capital budgeting techniques used in Macedonian companies, which has not been researched yet. The study helps academics and researchers to have a better perception and comprehend the capital budgeting techniques being used by Macedonian companies. Besides, it may also help financial managers of Macedonian companies to identify areas where recommended techniques are not implemented. By virtue of the fact that these techniques are a catalyst for activities which generate value, the use of them is very beneficial for the companies in every aspect. The results of this research study are also useful to investors. They can learn more about the practices of capital budgeting among business companies in Macedonia. Overall, this material is of great importance for the performance and competitiveness of the companies, regardless the size or the maturity stage of the company (Vos & Vos, 2000; Danielson & Scott, 2006).

The scope of this research is limited to the Macedonian companies. The relationship of eleven independent variables and one dependent variable are analyzed. The dependent variable is the type of capital budgeting technique used and independent variables are some company and CFO characteristics. The foundation of this research study is a primary survey of financial managers in Macedonian companies, which are randomly selected. To obtain the relevant information from the CFOs concerning capital budgeting techniques a structured questionnaire is used.

The thesis is organized as follows: after introduction, chapter two explains the capital budgeting practices, the factors affecting their choice and reviews previous literature on CBT and the economic history of Macedonia. Chapter three examines the research methodology. It gives the research design, sampling design and the methods used to obtain information. Chapter four presents the data collected from the field, its analysis, and the interpretation of the findings, followed by chapter five where the discussion of findings with contribution is given. Finally chapter six examines the conclusions of the study.

2 LITERATURE REVIEW

2.1 Capital Budgeting Overview

Corporate financial management is dealing with the financial, investment and dividend decisions of a company with an overall goal of maximizing the shareholder's wealth. To conduct business the company makes investments in long term tangible and intangible assets. This constitutes the investment decision. Financing decisions deal with sources of funding for those assets and the firm's optimal capital structure in terms of debt and equity. The revenues and cash flows generated from the investments can be either retained as retained earnings within the company for further investment or distributed as dividends to the shareholders of the company. This constitutes the manager's dividend decision (Vishvanath, 2007).

Capital budgeting is a formal process used by the financial manager for making investment decisions on projects and evaluating potential expenditures. It involves the investment of the current funds for disposition, modification, addition, or replacement of fixed assets to maintain efficiency. These large expenditures, known as capital expenditures, include the acquiring of tangible assets like land and building, rebuilding or replacing existing equipment, new equipment, and intangible assets like research and development, patents, new technology, trademarks etc.

Capital investment projects are usually highly risky and long-lived projects with cash flows and benefits spread out in time. They require large upfront investments and the time to regain the initial investment could be long. Typically, capital investments are costly to get out and irreversible. Unjustified investments can threaten the financial wellbeing of the company (Vishvanath, 2007). That's why the carefully planning of the investments is crucial for the company to attain the corporate goals.

Inputs used in capital budgeting encompass cost of capital, costs of the assets, hurdle rate, salvage values, effective tax rates, depreciation methods, and other additional costs, revenues or cost savings. The main output of the process should help the financial managers in evaluating whether a capital project is worth investing in or not, and to choose the ones that maximize shareholders wealth and the value of the company optimally (Gupta & Pradhan, 2017). The capital project, in which the company invests its funds, has the power to impact the future success of the company and that's why capital budgeting process is an invaluable part of any company.

2.2 Capital Budgeting Process

The capital budgeting process includes specific procedures that the manager uses for identifying and evaluating capital projects. These procedures depend on the complexity and size of the project, the financial manager's level in the company and the size of the company. The typical stages in the capital budgeting process are as follows:

- **Identification of potential investment opportunities**

Generating good investment ideas is the first step and the most important one in the capital budgeting process. Investment ideas can be produced from the top of the company and from the bottom, from any sector or department, or from outside the company (e-Finance Management, 2017). The company has to identify the investment opportunities and generate project proposals. Project proposals have to fit in with the corporate objectives of the company, with its vision, mission, and long-term strategic plan.

There are certain issues that need to be taken into consideration before initiating the search for potential investments: the external environment should be monitored regularly to be informed about new investment opportunities, the corporate strategy should be defined on the basis of the SWOT analysis which examines the strengths, weaknesses, opportunities and threats of the company, the strategy and objectives of the corporation should be shared with the members of capital budgeting process and the employees should be involved and give suggestions (Chandra, 2005). Some companies have special divisions for research and development, continuously identifying attractive investment opportunities and searching for new products, services and processes. But sometimes, outstanding investment suggestions can come through conversations between employees and other informal actions (Dayananda, Irons, Harrison, Herbohn & Rowland, 2002).

Some investments are required to satisfy particular regulatory, health and safety requisites and are obligatory and essential for the company to remain in business. Unlike these, investments generated by competition and investment opportunities for growth and cost reduction are optional investments. They mainly constitute the strategic plan of the company and may also put new directions for the corporate strategic plan in turn. (Dayananda et al., 2002). In this stage the company should verify that it has recognized investment opportunities and proposals which are potentially profitable, since in the remaining part of the capital budgeting process should be ensured that the most profitable proposed investments are appraised, selected and executed (Lakew, 2017).

- **Preliminary screening of projects**

After the identification of investment opportunities, different sectors submit potential proposals to the committee. Prior to reaching the capital budgeting committee, investment

proposals are sent to several members who make sure whether the proposals are congruent with the prerequisites and then categorize these according to their classes: expansion, new product, replacement and obligatory and welfare investments. The aim of this classification is to facilitate the duty of the committee members and to enable quick decision making, budgeting, and control (Business Jargons, n.d.). In this stage it is crucial to eliminate the unstable and marginal project proposals, as it is not worth wasting resources to assess such proposals in depth (Chandra, 2005).

- **Financial evaluation of projects**

Once the investment projects pass the preliminary screen stage, they are subject to rigorous financial evaluation to determine if they would add value to the company. This phase is also known as quantitative analysis, project screening and evaluation, or assembling of investment proposals (Dayananda et al., 2002). In this stage selecting all accurate standards to judge the desirability of a project proposal are mainly encompassed. The proposal has to match the company's objective to maximize its market value. The estimated addition to the value of the company is given in terms of the projects' net present values. So this stage includes collecting information to predict future cash flows for each project and then evaluating the profitability of the project. This represents the foundation of accepting or rejecting an investment project. An application of project evaluation techniques, forecasting techniques, sensitivity analysis and risk analysis is involved in the project appraisal stage. With these techniques and analysis the project proposal's cash flows are forecasted; the uncertainties and risks associated with those cash flows are analyzed; the sensitivity of the results to possible changes in the predicted cash flows is examined and alternative estimates of net present values are prepared (Dayananda et al., 2002). The success or failure of the company clearly depends on these decisions, and so does its future direction. Therefore, project appraisal is of vital importance for the firm.

- **Project selection**

The next stage is the project selection stage. Here the shortlisted profitable projects are prioritized and scheduled corresponding to the available resources of the company, the cash flow timing of the investment project and the company's corporate strategic plan (e-Finance Management, 2017). There is a possibility that some projects appeal on their own but are not in congruence with the strategy of the company. As different companies have different objectives and different businesses have different requirements, there is no standardized technique applicable in the selection process of the investment proposal. For this reason the acceptance of the proposal depends on the criteria of selection and the process of screening, which are established separately for every company taking in consideration the objective of the investment being undertaken.

Financial managers consider the results generated from the quantitative analysis together with relevant prior knowledge, utilizing their regular sources of information, experience,

expertise and judgment to decide upon the final decision, which is whether the investment project should be accepted or rejected (Awomewe & Ogundele, 2008). After the investment proposal's acceptance, the finance team explores the different alternatives for raising or acquiring funds. This is called preparing the capital budget. Financial resources include cash flows generated internally and equity and debt securities sold in capital markets. Financial manager's task is to examine the most cost effective strategy to generate capital within the company's strategy and capabilities.

- **Implementation**

Once investment projects are finalized in the selection stage, they must be implemented by management. Various departments and sectors of the company are expected to be involved during this implementation stage. Different responsibilities like implementing the investment projects, realization of them within the required period of time and cost reductions are allocated. Constant monitoring of the project's progress is a fundamental part of the project implementation stage. The aim is to identify potential omissions and thus undertake early interventions. Deviations from the estimated cash flows have to be detected on time to allow taking corrective actions when needed (Dayananda et al., 2002).

- **Post-audit**

The final stage of the capital budgeting process, the post-audit stage involves the comparison of actual results with the planned or predicted results (e-FinanceManagement, 2017). It is a feedback device. For instance, how do the cash flows, revenues and expenses realized from an investment compare to the predictions? The responsibility whether the projections coincide or not with the actual results are in the hands of the project managers. They have to provide a full explanation of any major differences.

Post-auditing capital projects is very important for several reasons. By monitoring the analysis and forecasts, which form the basis of the capital budgeting process, overly optimistic forecasts as well as systematic errors and deviations become apparent. This stage shows how realistic the assumptions are and if the decision making is efficient. Another reason is whether sales or costs are out of line. It concentrates on adjusting the performance results closer to the expected ones, and this leads to improvement of business operations. Finally, post-auditing recent investment projects generates concrete ideas for future investments. It helps managers to distinguish between profitable areas and not profitable ones, so they can invest more heavily in profitable projects and terminate, or invest to a lesser extent in unsuccessful projects before losses become too great. (Seal, Garrison, Rhode & Noreen, 2015).

2.3 Classification of Investment Projects

Based on the influence that investment projects have on the investment decision process, they can be classified into two categories:

Independent projects: An independent project is one whose acceptance or rejection is independent of the acceptance or rejection of other projects (Hillier, Ross, Westerfield, Jaffe & Jordan, 2013). Independent projects do not compete with one another, there is no relation between them and therefore the evaluation is made independently for each project on the basis of their individual profitability.

Mutually exclusive projects: Projects which cannot be approved simultaneously are mutually exclusive projects. There is a competition among the projects themselves, in such a manner that accepting one project prevents accepting other alternative projects. Just one project can be accepted. Mutually exclusive projects are assessed individually to choose the project which is generating the maximum net present value to the company. If it happens that two departments separately analyze projects which are later identified as mutually exclusive, lots of resources and time may be wasted. That's why the early identification of these alternatives is of vital importance for a reasonable screening of investments. (Dayananda et al., 2002).

The in depth analysis of the capital projects is made based on the predicted cash flows. Still there are some other categories which can influence the evaluation and selection of capital projects. These categories are project sequencing and capital rationing.

Project Sequencing: Some investment projects are implemented in such an order that today's investment in one project leads to investments in other future projects. The implementation of a project which is profitable today leads to an investment in the next project the following year. But if it comes out that the same project is not profitable, the company decides to reject the next project (e-Finance Management, 2017).

Capital Rationing: In a situation where the company has unlimited financial resources, it can implement all the investment projects where forecasted returns are above the cost of capital. But actual business has a different situation. Companies have capital constraints and budget ceilings, so they have to use capital rationing. Capital rationing means that if the company has got more acceptable investment projects which require a bigger amount of funds than it is available, the company attempts to prioritize them and then select the combination of investment projects that maximize the value of the company not exceeding the budget ceiling constraint (Van Horne & Wachovicz, Jr., 2008).

2.4 Capital Budgeting Techniques

Regardless to the economic conditions, companies have to make investments in order to run current business activities successfully or to make exploitation of new opportunities. There is a variety of techniques that are used in practice for making investment decisions and they can be divided into two groups: non-discounting techniques and discounting techniques. Non-discounting cash flow techniques ignore the time value of money and include the payback period (hereinafter: PBP) and the average accounting return technique (hereinafter: AAR). Discounting cash flow (hereinafter: DCF) techniques consider the time value of money and include: net present value (hereinafter: NPV), internal rate of return (hereinafter: IRR), modified internal rate of return (hereinafter: MIRR), discounted payback period (hereinafter: DPBP) and profitability index (hereinafter: PI). DCF methods estimate how a cash flow received today is more worth than a cash flow received in the future. The time value of money is the opportunity cost from not having the money today (Hillier et al., 2013).

It is favorable that each capital budgeting technique has got the following general virtues:

- All cash flows are considered by the technique for determination of the real profitability of the project.
- The technique distinguishes between good projects and bad projects in an unambiguous way.
- It helps prioritizing projects in accordance with the real profitability.
- It takes into account the fact that early and bigger cash flows are preferable to later and smaller ones.
- Among mutually exclusive projects the technique helps to select the project which maximizes the shareholder's wealth.
- It is a criterion which is applicable to any conceivable investment project independent of others.

2.4.1 The payback period technique (PBP)

One traditional technique of capital budgeting is the payback period. It measures the time it will take to recover the initial cash outlay invested in a project in the form of net cash inflows. In other words, how long it takes to get the money back (Brealey et al., 2011). It includes the cash inflows from operations, from recovery of working capital and from disposal of equipment. The payback period technique gives an answer in a number of periods not in a monetary value of profitability.

The PBP rule when making the investment decision is a particular cut-off date selected by the management. All investment projects with payback periods of this cut-off date or less are accepted, and all of those with a payback period that is longer than the selected date are rejected (Hillier et al., 2013). Depending on the cash flows, equal or not, there are two methods of calculating the PBP:

- When the cash flows are equal, as equation (1) shows, the initial investment cost is divided by the constant annual cash flow (Brealey et al., 2011):

$$PBP = \frac{\text{Initial Investment}}{\text{Constant annual cash flow}} \quad (1)$$

- When the cash flows of the project are not constant, PBP's calculation consists of cumulating the cash flows till the time when cumulative cash flow becomes equal to the initial investment

Some of the major strengths of the payback period technique are (Pandey, 2004): the PBP is easy to calculate and to understand. The application and concept itself are both simple. It uses cash flow information. This technique is cost effective and does not require much of the financial manager's time as well as the utilization of computers. The PBP technique highlights liquidity. Managers emphasize selecting more liquid projects with shorter payback periods, than projects with longer paybacks. They are less confident about predictions of cash flows that stretch far into the future. Additionally, funds for other projects become available sooner with shorter payback projects and so give the company more flexibility. The PBP technique is also useful in eliminating risky projects. It prefers projects which generate significant cash inflows in earlier years rather than projects with inflows in later years.

The payback period technique has also some significant weaknesses (Brealey et al., 2011):

- It neglects to take into consideration the time value of money. In the payback computations, cash inflows are not discounted, they are simply added as they are.
- This technique has got a short-term orientation. It disregards all cash flows that occur after the payback period. This can lead to a rejection of long-term projects with positive NPVs that produce significant inflows in later years.
- In relation to their cash flow pattern, the projects are not getting preference with this technique. The projects are equally weighted no matter whether they have got same PBP but different patterns or not.
- The payback period technique has an arbitrary standard when choosing the cut-off date, there is no guidance.

- This technique cannot be used as the only technique when deciding on a project, because it measures the capital recovery of the investment projects not the profitability.

The PBP technique is useful for companies with prospective business opportunities but no available cash, for companies when making relatively small decisions and when investing in emerging markets (Brealey et al., 2011). The use of the payback technique is also justified when there is a high uncertainty of the predicted cash flows in later years of the project, when profitability estimates are not of vital importance and preliminary screening of many proposals is necessary.

2.4.2 Discounted Payback period technique (DPBP)

Not taking in account the time value of money is one of the major limitations of PBP technique, which can be solved by using the DPBP technique. With this technique the cash flows are first discounted and then on the present value basis are calculated the years needed to recover the initial investment. Discounting reduces the value of the cash flows, and as long as the cash flows and discount rate are positive the discounted payback period will never be smaller than the payback period (Hillier et al. 2013). But despite this advantage, the weakness of this technique is not considering the cash flows beyond the payback.

2.4.3 Average accounting rate of return technique (AAR)

The average accounting rate technique is the ratio of the average project earnings after taxes and depreciation, divided by the average book value of the investment. Equation (2) shows how to compute AAR: the average net income is divided by the average amount invested (Hillier et al. 2013).

$$AAR = \frac{\textit{Average net income}}{\textit{Average amount invested}} \times 100 \quad (2)$$

The AAR rule means to accept the project if the ARR is higher than the minimum rate set up by the managers, and reject it if the AAR is less than the minimum rate set up by the managers.

The merits of this technique are exceeded by the demerits. Some of the merits are that the calculation is simple and is based on accounting numbers which are readily available in the company's accounting system.

On the other hand, the most important demerit with AAR is that it uses accounting information (net income and book value of the investment) rather than cash flows when projects are evaluated. Accounting numbers are somewhat arbitrary. Second, AAR does not take in account the time value of money so benefits in the earlier or later years are not valued at par. Another problem is that there are no guidelines how to choose the right target rate. The arbitrarily chosen AAR by the management is selected on the basis of the company's current earnings. Because of this measure it sometimes happens the profitable projects to be rejected by companies if the AAR is less than the current return on assets of the company (Pandey, 2004).

This technique is frequently used as a backup to DCF techniques. It can be useful as a measure when the performance is evaluated and as a control device. But it is not recommended to use it as a decision making technique for capital investments as the cash flow information is not used.

2.4.4 Net present value technique (NPV)

The net present value technique is a favored capital budgeting technique that takes into account the time value of money. It recognizes that cash flows differ in value at different periods in time and can be computed only when they are expressed in present values. It is the difference between the sum of the present values of the future cash flows of the project and the project's initial cost, discounted at a rate consistent with the project's risk as shown in equation (3) (Hillier et al., 2013):

$$NPV = -C_0 + \frac{C_1}{1 + R} + \frac{C_2}{(1 + R)^2} + \dots + \frac{C_t}{(1 + R)^t} \quad (3)$$

Where:

- C_0 = Initial Investment

C = Cash flow

R = Discount rate

t = Time

The NPV calculation consists of two steps: first, the net cash flows that will be generated by the investment over its life are estimated; second, these cash flows are discounted at an interest rate which reflects the risk degree inherent in the project. The streams of cash flows are now transformed into present values and the resulting sum is the NPV of the project (Megginson & Smart, 2008). The interest rate, at which the cash flows are discounted is the company's opportunity cost of capital and is equal to the required rate of return that investors expect on investments of comparable risk. It is referred to as an opportunity cost as investing the project takes away the opportunity of the shareholder to make an investment in a financial asset.

The NPV decision rule means if the NPV is greater than zero, the investment increases the value of the company and the project should be accepted. In this case the return is more than sufficient to compensate for the required return. If the NPV is less than zero, the investment decreases the value of the company, the return is less than the cost of capital, and the project should be rejected. If the NPV is equal to zero, the investment does not change the value and the decision maker is indifferent between accepting or rejecting the project (Van Horne & Wachowicz, Jr., 2008). This technique is also applicable when there is a selection between mutually exclusive projects. The selection is made according to the NPV of the projects: the one with the highest positive net present value is ranked as first and then selected.

The key advantages of the NPV are (Megginson & Smart, 2008):

It uses only cash flows, not accounting earnings.

It discounts the cash flows properly by recognizing the time value of money.

It uses all the years cash flows of the project over its useful life.

It is an absolute measure of profitability.

The NPV approach offers a way to control differences in risk among the investment projects.

Riskier investment cash flows are discounted at higher rates.

It is the only technique which complies with the principle of value-addition which implies that the project's net present value is the contribution that adds value to the company.

It is always consistent with the company's goal of maximizing shareholders wealth.

Accepting positive NPV projects' benefits shareholders' and the market value of the company's shares increase.

The NPV technique has also got some flaws (Pandey, 2004):

- It requires estimation of the cash flows which is sometimes difficult due to the uncertainties that exist in business world due to uncontrollable environmental factors;
- It requires calculation of the required rate of return to discount the cash flows, and a change in the discount rate leads to a change in the desirability of the project;
- It does not consider the value of creating options. If the options that investments in emerging markets may yield are not accounted properly, the NPV technique can lead companies to invest too little.

2.4.5 Internal rate of return technique (IRR)

The internal rate of return summarizes the merits of a project in a single number. This number is internal to the project and does not depend on the interest rate dominating in the

capital market or on anything except the cash flows of the project. The IRR is the discount rate that causes the NPV of the project to be zero (Hillier et al. 2013).

To determine the IRR trial-and-error is used. First a random discount rate is used to compute the NPV of the project. If the NPV is negative a lower discount rate should be taken to increase the NPV. If the NPV is positive, a higher discount rate should be taken to lower the NPV. The main thing is to continue adjusting the discount rate until the NPV is equal to zero (Cottrell, 2001). This type of calculation is time-consuming so it is much easier to use a spreadsheet program or a calculator to determine the IRR (Quiry, Dallochio, Le Fur & Salvi, 2005).

An investment project is only accepted if the IRR equals or exceeds the cost of capital, which in this context is the minimum acceptable rate of return or a hurdle rate. The hurdle rate should be set equal to market returns obtained on similar investments (Megginson & Smart, 2008). In general, if IRR exceeds the hurdle rate the project has a positive NPV and should be accepted. If IRR is less than the hurdle rate, NPV is negative and the project should be rejected. If IRR equals the hurdle rate, NPV is equal to zero, so the project acceptance and rejection yield the same value (Bosri, 2016).

Two common problems affect the independent and mutually exclusive projects when utilizing the IRR technique. If during a project the company receives cash first and pays out the cash later, it is a financing type of project. The IRR rule is reversed for financing types of projects when IRR is less than the hurdle rate the project should be accepted, and if IRR is greater than the hurdle rate the project should be rejected (Quiry et al., 2005).

The second problem is when the project has got multiple rates of return. Multiple internal rates of return are generated by a project when both an inflow and outflow appear after the initial investment. The project's cash flows have got nonconventional patterns and demonstrate two changes of sign or flip flops (Van Horne & Wachowicz Jr., 2008). The range between the multiple IRRs is the range in which the NPV is positive. But according to the IRR decision rule the project's IRR should be compared with the hurdle rate, and if there are more values for IRR, it is not clear which value of IRR to compare with the hurdle rate. In a case like this the IRR does not make any sense. Regarding the NPV rule, it implies to accept the project if the hurdle is in the range between the IRRs and to reject the project if the hurdle rate lies outside this range (Hillier et al., 2013).

When evaluating mutually exclusive projects the decision when using IRR may differ from the decision when using NPV because of the reinvestment assumption that NPV takes cash flows reinvested at the cost of capital, and IRR takes cash flows reinvested at the internal rate of return. This assumption may cause different outcomes when deciding among mutually exclusive projects when the timing of the cash flows is different among projects

and when there are scale differences. So we can conclude that the IRR technique has got two problems specific to mutually exclusive projects, the timing problem and the scale problem (Hillier et al. 2013). One possibility to select a mutually exclusive project by using IRR is with incremental analysis, when comparing incremental IRR to discount rate. Otherwise it is best to use the NPV technique (Brealey et al., 2011). Among these problems, the lengthy and complicated calculation that requires this technique is also considered as a flaw.

Despite these weaknesses, the IRR has also strengths which make this technique favorable in the investment decision process. It takes the time value of money into account and considers all generated cash flows by the project. It is a very reasonable technique in real life as the profitability of the projects is measured in percentage and thus can be easily compared with the opportunity cost of capital. The hurdle rate of the IRR is market based, so it takes away the subjectivity and allows managers to make adjustments for differences in risks among projects. And the focus of this technique is on cash flows not on accounting measurements (Megginson & Smart, 2008).

2.4.6 Modified internal rate of return technique (MIRR)

The modified internal rate of return generates an NPV of zero when the initial outlay is compared with the terminal value of the cash flows of the project reinvested at the cost of capital/required rate of return (Quiry et al., 2005).

This capital budgeting technique overcomes the shortcomings of the regular IRR in two ways:

- With this technique it is assumed that the cash flows of the project are reinvested at the cost of capital despite the regular IRR where they are reinvested at the project's own IRR. The MIRR technique reflects better the profitability of the project since reinvestment at cost of capital is more realistic;
- With this technique the issue of multiple rates of return does not exist.

Although MIRR is an advanced version of the regular IRR, there are some issues that need to be considered when assessing mutually exclusive projects. If mutually exclusive projects equal in size, the NPV and MIRR result in the same decision. But if these projects are with different size, although MIRR is better in calculating the true rate of return than the regular IRR, the best alternative is the NPV when measuring the contribution of each project to the value of the company.

2.4.7 Profitability index technique (PI)

The profitability index is a similar technique to the NPV. As equation (4) shows, the PI is calculated by dividing the present value of the expected future cash flows after initial investment and the amount of the initial investment (Hillier et al., 2013).

$$PI = \frac{\text{Present value of cash inflow}}{\text{Initial cash outlay}} = \frac{PV(C_t)}{C_0} \quad (4)$$

The profitability index decision rule by independent projects is: if PI is greater than one accept the project. If PI is less than one reject the project, and if PI is equal to one the company is indifferent to the project. Whenever the NPV is positive the PI is greater than one.

When evaluating mutually exclusive projects the PI technique has got the same scale problem as the IRR, it ignores differences of the scales. But like the IRR this flaw can be corrected with the PI approach by using incremental analysis (Megginson & Smart, 2008).

In the case of limited financial resources or capital rationing, it is not possible to rank the projects regarding their NPVs. The NPV as an absolute measure is not a reliable technique to assess projects which require different initial investments. Due to this shortcoming of the NPV, it is better to rank them according to the PI approach. The PI technique is a relative measure and evaluates the worth of the projects in terms of their relative rather than absolute magnitude. But here it should be mentioned that the PI technique is not suitable when financial resources are also limited beyond the initial period of time. This technique cannot deal with capital rationing over multiple periods of time (Hillier et al. 2013).

Some additional merits of this technique are that the profitability index takes into consideration the time value of money as well as the project's generated cash flows, and it is consistent with the wealth maximization principle. Additional demerits are those which require estimation of cash flows with accuracy which is difficult under changing business world and a correct estimation of cost of capital (Pandey, 2004).

2.5 Determinants of Capital Budgeting Technique Choice

The selection of the capital budgeting techniques involves a large number of financial and nonfinancial factors. With different degrees of relationships these factors directly or

indirectly influence the selection of the techniques, and then the outcome of the analysis and final decision whether to accept the investment opportunity.

Some financial factors associated with the selection of capital budgeting techniques include: the size of the company, profitability, leverage, foreign sales, growth opportunities, capital expenditure of the investment opportunity, dividend pay-out policies and availability of cash. The nonfinancial factors include: industry, sector, management experience and educational background, quality of the project, life of the project, environmental responsibility, competitive position, corporate image and other external factors (Ahmed, 2013).

According to the literature, one of the main variables that have an impact on the CBT selection is the size of the company (Block, 1997; Brounen et al., 2004; Danielson & Scott, 2006; Schall, Sundem & Geijsbeek, 1978; Sridharan & Schuele, 2008). Larger companies are expected to use more innovative CBT to a larger extent than small companies (Arnold & Hatzopoulos, 2000). This conclusion is due to the fact that companies of large size have funds to utilize more sophisticated techniques and they also deal with bigger investment projects, which makes the utilization of innovative and sophisticated techniques cheaper (Ahmed, 2013; Andor et al., 2015; Bennouna et al., 2010; Brounen et al., 2004; Daunfeldt & Hartwig, 2011; Graham & Harvey, 2001; Hartwig, 2012; Hermes et al., 2007; Pike, 1996; Sandahl & Sjögren, 2003; Verbeeten, 2006).

Another important independent variable determining the use of capital budgeting techniques is whether the company is registered on the stock exchange. Results from previous studies show a significant positive relationship between the used technique and the presence in the stock exchange (Brounen et al., 2004; Hermes et al., 2007). Listed companies are more likely to use sophisticated capital budgeting techniques than the non-listed ones. Foreign ownership is also often taken in research studies as a determinant factor. There is also a positive correlation between foreign capital and the use of capital budgeting techniques (Brounen et al., 2004; Graham & Harvey, 2001; Hermes et al., 2007; Ryan & Ryan, 2002; Truong et al., 2008). Companies with foreign capital in their structure use sophisticated techniques like IRR and NPV more often than companies with only domestic capital. As far as the size of capital expenditure budget of the company is concerned, companies with larger capital budgets are using CBT to a greater extent than companies with small capital expenditure budgets (Hermes et al., 2007).

Empirical results indicate that the capital budgeting practices of a company are also correlated with the industry (Batra & Verma, 2017; Block, 2005; Schall et al., 1978; Truong, Partington & Peat, 2008), the level of economic development of the home country (Hermes et al., 2007) and the main activity of a company. It is common that manufacturing

companies are larger in size and they are dealing with bigger investment projects, so they use CBT more frequently than non-manufacturing companies (Daunfeldt & Hartwig, 2011).

Besides company characteristics, CFO's profile and qualification level is also found to have a great impact in the selection of capital budgeting techniques. Factors proving the greatest explanatory power are education (Brounen et al., 2004; Graham & Harvey, 2001), age (Graham & Harvey, 2001; Hermes et al., 2007) and involvement in the investment decision making process (de Andres, de Fuente & San Martin, 2015). According to the observations of Graham and Harvey (2001) and Ryan and Ryan (2002), large companies with MBA CFOs and high ratios of debt are considerably more inclined to utilize NPV and IRR than their counterparts. Verbeteen (2006) suggests that larger companies hire managers with interest in using more sophisticated techniques and appropriate competencies when dealing with greater investment risk and uncertainty.

Throughout the literature in different research studies different determinants of capital budgeting techniques were used. Brunzell, Liljebloom and Vaihekoski (2013), in their study of Nordic firms, take into consideration political risk, CFO's characteristics, short term pressure, agency problems and real options as factors influencing capital budgeting. According to them companies with high political or country risk are prone to use less sophisticated methods. Holmen and Pramborg (2009) also indicate this in their study of Swedish listed companies. They report that with the political risk the use of NPV decreases and the use of the payback method increases. When analyzing the other factors, they suggest that companies subject to higher short-term pressure, with higher agency problems, and with more real options, often rely on other capital budgeting techniques than the NPV.

Sridharan and Schuele (2008), examine in their study whether the company size and managerial perception of the company's risk level is relative to its competitors, affect the choice of capital budgeting techniques by managers in German companies. From the research results they conclude that the managerial perception of the risk level has got some impact on the selection of the CBT in Germany, but the size significantly influences the approach of German managers in the selection process.

Hermes, Smid and Yao (2007), study the relationship between the choice for the NPV technique as a dependent variable, and the size of the company and age of the CFO as explanatory variables. The results identify that both explanatory variables have got a negative and statistically significant coefficient, which indicates that smaller companies and companies with older CFOs use the NPV technique less than larger companies and companies with younger CFOs.

Daunfeldt and Hartwig (2011) analyze the correlation among the use of capital budgeting techniques in Swedish listed companies and the determinants: size of the company, growth opportunities, dividend pay-out policies, leverage, planned debt ratio, foreign sales, shares held by the management, and age and level of education of the CFO. The results of this study show that all the independent variables influence the choice of capital budgeting techniques in Swedish listed companies.

Danielson and Scott (2006) carried out a study which analyzes the capital budgeting practices of small companies. The study includes demographic variables to investigate the relationship between the capital budgeting technique and firm characteristics, such as size, industry, sales growth, business age, education level and age of the owner. Significant positive correlations between the dependent and independent variables are indicated from the results of this study.

However, the theory always emphasizes the influence of financial variables when making capital investment decisions, not taking much into consideration other nonfinancial factors. Prior research studies which focus on nonfinancial aspects report employee's safety, social concern and community, corporate image, competitive position, environmental responsibility and legal requirements as significant qualitative considerations when appraising investment projects (Fremgen, 1973; Petty, Scott & Bird, 1975; Skitmore, Stradling & Tuohy, 1989). Chen (1995) claim that nonfinancial factors play a very important role in the evaluation of projects and that they are competent to identify competitive advantages in investment projects that financial factors fail to do. He recognizes the following nonfinancial factors: strategy, potential future growth, quality, flexibility, market tendency, legal issues, ethical considerations and social aspects.

Later studies carried out by Adler (2006), Akalu (2003), Hall (2000), Lopes and Flavell (1998), Moutinho and Lopes (2010) and Nowak (2005), also emphasize that the investment decision-making process have to take into consideration a wide range of aspects, including strategic, organizational, political, legal, technical, environmental, and social aspects.

2.6 Brief Overview of Previous Research

Numerous research studies over the last half century evidenced a paradigm shift in the investment practices of companies. Financial research has got recorded how companies use capital budgeting techniques in the investment decision-making process. Academics and financial managers have not been in full concurrence about the selection of the best capital budgeting technique.

Studies on the usage of CBT have been made in different continents, countries and regions. There is also a particularity of time when each study was made. Given the diversity of socio-economic scenarios, crisis, globalization, opening new markets and technological changes, this may influence the perception of the results obtained from the researches (de Souza & Lunkes, 2016).

The interest in the research of capital budgeting practices used by CFO's first emerged in the early 60s. Istvan (1961) and Miller's (1960) studies on companies in the United States are the starting point of a series of researches in companies around the globe, which carry on today.

A managerial tendency for gradual usage of theoretically more sophisticated techniques based on discounted cash flows is reflected by early empirical studies of the 60s and 70s. But some studies during this period report an increasing gap between financial theory and company's practices (de Andres et al., 2015). Managers preferred to rely on nondiscounted capital budgeting techniques like PBP followed by AAR, as opposed to techniques which from a theoretical perspective are more appropriate. According to Christy (1966), Miller (1960), Pike (1996) and Schall, Sundam, and Geijsbeek (1978), the payback period was the most used technique for evaluation of the investment projects, while according to Istvan (1961) the most used and preferred technique in this period of time was the accounting rate of return. The least applied capital budgeting techniques during this period of time were the discounted cash flow techniques, a result in contrast to modern financial theory (Baker & Beardsley, 1972; Istvan, 1961; Mao, 1970; Schall, Sundam, & Geijsbeek, 1978). This can be attributed to the lack of financial sophistication and limited utilization of computer technology in this period of time.

However, a big change was observed by the end of the 1980s in which researches by Blazouske, Carlin, and Kim (1988), Kim and Farragher (1981), Klammer (1972), Klammer and Walker (1984), Pike (1988), and Stanley and Block (1984) indicate a transformation in the use of capital budgeting techniques from non discounted to more sophisticated techniques.

Evidence of continuous increase in the usage of discounted cash flow techniques, especially the net present value and internal rate of return, is provided by research studies from the 1990s (Bierman, 1993; Chadwell-Hatfield, Gilbert & Reichert, 1995; Goitein, Horvath, & Webster, 2011; Kester, Chang, Echanis, Haikal, Isa, Skully, Kai-Chong & Chi-Jeng, 1999; Petry & Sprow, 1994; Sangster, 1993).

By the end of the 90s, PBP and IRR were the most favored techniques among CFO's in companies in the United States (Graham & Harvey, 2001). But recently these preferences

inverted. According to Ryan and Ryan (2002), the most frequently used capital budgeting techniques in the US are NPV on first place with 85,1%, followed by IRR with 76,8% and PBP with 52,6%. NPV is also the most used technique among managers in Canada (Bennouna, Meredith & Marchant, 2010) and Australia (Truong et al., 2008). Similar preferences show studies conducted in Nordic European countries. Brunzell, Liljebloom and Vaihekoski (2013) carried out a research in Denmark, Norway, Sweden, Finland and Iceland. This study shows that the net present value is the primary technique used when evaluating investment projects (41,29%). The second most popular is the PBP technique despite its theoretical disadvantages (25,16%). The IRR is used by only one-fifth of the respondent managers followed by the AAR.

By a comparison of this study from 2008 and the study by Liljebloom and Vaihekoski from 2004, we can see an increase in the usage of more sophisticated capital budgeting methods in Finland. In 2004 financial managers of listed companies in the Finnish stock exchange were surveyed about their investment decisions. The results show the PBP and the IRR as primary methods used for the evaluation of investment projects.

Wnuk-Pel (2014) provides an insight into the capital budgeting practices of Polish enterprises. 53% of the respondents used the NPV in the phase of preparing a decision, 47% preferred the IRR and 35% favored the PBP. Similar results on the use of capital budgeting techniques are observed in an Indian research study executed by Singh et al. (2012). An increasing adoption of NPV and IRR with a preference for IRR, is indicated. As a secondary criterion, the PBP technique is still widely used to evaluate investment projects (Gupta, Jain, & Yadav, 2011). The study by Suzette and Howard (2011) also shows that the most popular and most used techniques in South Africa are the NPV and IRR, and as a secondary technique the payback period. They also reveal that when evaluating the investment project, some companies use multiple techniques.

From the research study by Brounen, Jong and Koedijk (2004) different preferences are observed in four European countries, the United Kingdom, the Netherlands, Germany and France. The results from this survey show that corporate executives apply the payback period as a primary technique when evaluating investments. The preferences of the CFOs in terms of the more sophisticated techniques that take time value of money into account are different in these countries. French and British companies favor the IRR when evaluating investment alternatives while German and Dutch more frequently use the NPV. An interesting fact from this study is that among the French managers the usage of the profitability index is more prevalent than the net present value.

The majority of more recent published research indicates that in most European and Asian countries the most preferred techniques are PBP and IRR, over all other capital budgeting techniques. In Europe this is the case of Germany (Brounen et al., 2004, Sridharan & Schuele, 2008), Sweden (Holmen & Pramborg, 2009), Croatia (Dedi & Orsag, 2007) and

Spain (de Andres, de Fuente & San Martin, 2014), and China (Hermes et al., 2007), Japan (Shinoda, 2010) and Singapore (Kester et al., 1999; Leon, Isa & Kester, 2008) in Asia. In Serbia the dominant techniques for evaluating projects are the PBP on first place followed by the PI and NPV (Barjaktarevic et al., 2016).

Although academics of the finance literature favor and recommend the usage of discounted techniques in evaluating projects, broadly speaking, many managers continue to use simple techniques, especially in companies of small and medium size in developing countries (Verbeeten, 2006). This can be attributable to some factors like: ease of calculation, the DCF techniques are difficult in understanding and using (Pike, 1996), lack of sophistication from the management (Graham & Harvey, 2001); lack of funds and limited usage of computer technology (Ryan & Ryan, 2002) and a demand for a lot of human resources (Lam, Wang & Lam, 2007).

With an examination of previous studies we can conclude that the most applied practices in investment project analysis are the payback period and the net present value followed closely by IRR. The payback period was dominant in the period of time from 1978 to 1999 (Block, 2003; Brijlal & Quesada, 2009; Brounen et al., 2004; Holmén & Pramborg, 2009; Kwong, 1986; Lam et al., 2007; Lazaridis, 2004; Pike, 1985; 1988; Sandahl & Sjogren, 2003; Schall, Sundem & Geijsbeek, 1978; White, Miles & Munilla, 1997). On the other hand during this period of time the net present value was the least used method according to Mao (1970) and Schall, Sundam, and Geijsbeek (1978). The net present value preponderated in the years 2002 to 2012 (Bennouna et al., 2010; Brounen et al., 2004; Correia & Cramer, 2008; Hartwig, 2012; Hermes et al., 2007; Maquieira et al., 2012; Ryan & Ryan, 2002; Truong et al., 2008). Today the dominant CBT are the net present value, the internal rate of return and the payback period.

These research findings represent evidence that over the years, companies have accepted DCF practices that consider the value of money over time. This indicates an increasing level of sophistication in capital budgeting practices.

2.7 Economic History of Macedonia

Capital markets, financial institutions and business enterprises in the Central and Eastern European countries (CEE) have undergone considerable transformations during the past decade. These countries belonged to the socialist block until the end of the 80s and are called transition countries. After the collapse of the Yugoslav socialist regime, they had to implement a new system and new reforms. The aim was to restructure the political and economic system of these countries, to form institutions and infrastructure adequate for the transit to market economy and to open up the transformation process of ownership.

Every country has got its own tradition, population, economic structure and performances, and its own level of economic development. That's why the process of transition was different in every country. It had not the same intensity, took different forms and the end results were also different. Despite these distinctions, the aim of the transition process was the same in each economy. It meant privatization of companies that were in social or state ownership, liberalization of the financial markets, price and trade liberalization, and abandoning import quota and export permissions (Janchevska, 2014). This period is characterized by a macroeconomic instability with a decline in GDP, an increase in the unemployment rate, significant monetary deficits and practically no foreign investments. The inflation rates also increased to enormous levels and the macroeconomic measures and instruments that took place were far from good to handle this increase.

As the last of the former Yugoslav republics, Macedonia started the process of its economic transition through the establishment of its own monetary institution. It gained its monetary independence from the former Yugoslavia on April 26, 1992, and the Macedonian denar was introduced as its own currency (Nenovski & Smilkovski, 2012). The country started to build up its market economy and setting up its privatization frame.

This process was neither easy nor short-lived and it took ten years due to economic difficulties. An imposed economic development policy, which relied on increased foreign debt, heavy industry and high unemployment rates accompanied this process from the very beginning (Willemsen, 2006).

After Yugoslavia's break up, the Macedonian economy faced numerous internal and external shocks from economic and political nature that damaged the local economy (Nenovski & Smilkovski, 2012). The first shock was the war on the territories of some successor states of Yugoslavia, which followed after the disintegration. Luckily the war did not take place in Macedonia, but a large number of the markets where this country previously made a placement of its products, were lost. As a result Macedonian companies had to deal with the problem of gaining new markets in the crowded economic world, which was at times very difficult and almost unachievable. To make matters worse the United Nations imposed sanctions with economic and political character against Yugoslavia in 1993-1994, because of the war on the territory of Bosnia and Herzegovina and the Republic of Croatia. This Western embargo on the Yugoslavian common market destroyed trade relations with Macedonia's formerly most important foreign economic partner. In such circumstances, it was not possible to sell the Macedonian products in the markets of their traditionally biggest trade partner. And this was not the only issue but also the transportation of these companies' goods was made through indirect and alternative routes, because transit through Yugoslavia was prohibited (Nenovski & Smilkovski, 2012).

The loss of markets of the Macedonian companies, accompanied by increased costs of transportation and increasing negative financial results was a new shock for the economy. Another equally strong shock occurred after these events. A diplomatic conflict with Greece in 1994-1995 over the name of the Macedonian state, led to the introduction of Greece's trade boycott for the import of Macedonian goods to Greece and for the transportation of the same through the territory of Greece (Nenovski & Smilkovski, 2012). The only window of Macedonia to the world at that time was the transportation of the Macedonian goods through the neighboring country Bulgaria which was luckily available. But Macedonian products became overpriced in emerging markets and also the goods imported on the domestic market due to the increased transport costs.

The shocks to the economy did not come to an end. The regional instability in Macedonia continued with the Kosovo crisis in 1999, when the country decided to temporarily host 360 000 refugees from Kosovo, whose residence spent enormous amounts of the country's funds (Nenovski & Smilkovski, 2012). The Republic of Macedonia lost again the Yugoslav market. Few sectors of the economy that previously brought in foreign currency were also hurt by the war. Political risk distanced the foreign investors and economic trends were moving downwards rapidly. The economy of Macedonia was facing an absolute collapse.

After the crisis in Kosovo the economy began to recover. It recorded its best results in 2000 which were almost equal to the results before the decay of Yugoslavia. Then the most devastating shock happened. The Republic of Macedonia's territory was undergoing a war which cause has not been defined yet. A significant part of the economy was destroyed, hundreds of lives were lost and immense amounts of financial resources were irreversibly used for military purposes. Hundreds of millions German marks from the state budget and reserves were spent on bombs, guns, tanks, grenades, planes and similar assets, instead of developing purposes (Nenovski & Smilkovski, 2012). Besides this, there was again a blockade on the Yugoslav markets for Macedonian companies which contributed to a dramatically decline of investments in the economy. After years of wandering and seeking a position on the world economic scene, Macedonia enthusiastically overcame its transition period and proved its power and durability. In the years that followed the country began to recover and managed to have a positive growth. The GDP of Macedonia grew by an average of 6% on a yearly basis until the 2008 global economic crisis. In comparison to most other European countries, the global crisis had little impact on the Macedonian economy. Despite the collapse in export demand and the loss of external financing which occurred at the end of 2008, the Macedonian financial system proved resilient. This was due to the strict rules of the banks in Macedonia, the low level of public debt, the significant foreign exchange reserve buffer and the tax and social contributions reforms (Bartlett & Monastiriotis, 2010).

In conclusion, Macedonia's progress in transition has been stable, but quite slow. It lags behind the other southeastern European countries. Macedonia today is a small economy with a gross domestic product (GDP) of \$13 billion (Wikipedia). It is an open economy, highly integrated into international trade. Services, industry and agriculture are the most important sectors of the economy. Macedonia today maintains a low debt-to-GDP ratio and is experiencing a reinvigorated investment interest by companies from Algeria, Turkey, Albania and others. The education and skills of the workforce are competitive, but without adequate jobs. High unemployment rates, political issues and a low standard of living are causing occasional social unrest in this country today.

3 RESEARCH METHOD

3.1 Research Design and Sampling

In order to answer the research questions and test the hypotheses two different research designs are used: 1) Descriptive research design, to analyze the literature on capital budgeting techniques generally. This is presented in Chapters 1 and 2 of the master thesis. 2) Exploratory research design, to investigate the commonly applied capital budgeting techniques among Macedonian companies and the factors influencing their selection. A survey is conducted to get information about the frequency and type of CBT used, as well as company characteristics and CFO's features as potential factors. A combination of questionnaires developed by Graham and Harvey (2001) and Andor, Mohanty and Toth (2015) is used as the survey instrument with some modifications. The survey research method is used because an analysis of a large number of companies is enabled and a foundation for the generalization of prospective results from the study is provided through it. It is also most appropriate for the comparison of the results about the extent of usage of CBT from this study with the results of studies carried out in other European countries.

Macedonian companies from different industry sectors are chosen as the population. The goal of our sampling procedure is to select a sample of companies to maximize representation by including an adequate number of small, medium, and large companies, as well as privately and state owned companies. Only the chief financial officer or the executive manager are competent to give credible answers about the use of CBT in the company, so the questionnaire is addressed to CFOs of the 100 most successful companies in Macedonia. The sample is complemented with randomly chosen Macedonian companies based on available data.

Finally, to study which factors determine the choice of capital budgeting techniques in Macedonian companies a multivariate ordinal regression analysis is conducted. The dependent variable is the frequency of usage of CBT and independent variables are company and CFO's characteristics. From this analysis, we learn about the factors influencing the decisions the manager makes regarding the choice of the CBT in Macedonian companies.

3.2 Data Collection Methods and Research Procedures

The empirical analysis regarding the type and frequency of usage of capital budgeting techniques in Macedonian companies and the factors determining their choice is based on the information obtained from a survey. The starting point for our survey, are the questionnaires of Graham and Harvey (2001) and Andor, Mohanty and Toth (2015). First our survey was pilot tested on five companies from different industries to make sure that respondents understand the information in the questionnaire. In light of the recommendations of the respondents of the pilot survey some adjustments were made and a structured questionnaire was designed.

The final survey was send by email to 232 CFOs of the sample companies, together with a cover letter explaining the objectives of the research and the confidentiality of their company information as well as guaranteeing anonymity of answers. The average time to fill out the questionnaire was about 12 minutes. Financial data and relevant information of the companies are based on their current status at the end of 2016.

Initially, unwillingness of CFOs to reveal their investment practices resulted in a low response rate, but by personally contacting the non respondents by phone to encourage them to respond, the response rate increased. The process of data collection began in November 2017 and ended in March 2018, with a total of 66 returned and filled in questionnaires. However, two of them had missing data, so we drop these companies from the sample. Final valid answers from 64 companies and a response rate of 27,6 % are achieved. This is a quite favorable result as compared with other similar academic surveys on CBT.

The survey includes three groups of questions. In the first group, several questions regarding company characteristics are included. In the second the CFOs features are described. And the third group encloses questions on capital budgeting techniques. The respondents were asked whether they conduct any formal capital budgeting analysis. They were asked which CBT they use on a five grade Likert scale from never to always. Only companies which answered often or always are classified as users of the technique. The survey also specifies that this question regarding capital investments refers to all non

routine capital investments. This framing is made because if it refers to all investments of the company, the answers would probably not be credible. Respondents were also asked to specify the minimum amount over which they make a formal investment analysis. Questions whether the companies use one given value of cost of capital for all projects or different values for different projects and which technique they use to compute the discount rate for the company or project are also included in the survey (Appendix 1) (Andor, Mohanty & Toth, 2015).

3.3 Data Analysis Methods

In order to test hypothesis one, results obtained from the survey about the use of CBT are summarized in tables and charts. The findings are then analyzed and compared to Continental European countries results and finally discussed. Regarding hypothesis two and three, to analyze the determinants of capital budgeting techniques selection, an ordinal regression analysis is conducted. The dependent variable is the use of the capital budgeting techniques: NPV, IRR, MIIR, PBP, DPBP, PI and AAR. The independent variables are company characteristics: type of main activity, sector, listed on the stock exchange, size, profitability, foreign sales, leverage and availability of cash as well as CFOs features: CFOs age, tenure and education. The regression model is in the form of the following equation:

$$CBT_j^i = a_0 + a_1DMAN_j + a_2DSECTOR_j + a_3DLIST_j + a_4SIZE_j + a_5PROFIT_j + a_6DLEV_j + a_7DFSALES_j + a_8DCASH_j + a_9DCFOAGE_j + a_{10}DCFOEDU_j + a_{11}DCFOTEN_j + \varepsilon_j \quad (5)$$

Where:

- CBT measures the frequency of use of each capital budgeting technique i ($i = 1, 2, \dots, 7$) by the CFO of company j ($j = 1, 2, \dots, 64$), according to the scores given on a scale base of five levels from “never” to “always”, where the answer “never” has value 1, “rarely” has value 2, “occasionally” has value 3, “often” has value 4 and “always” has value 5;
- SIZE is the size of the company defined by the number of employees and is measured across five categories (<10, 11-50, 51-250, 251-1000, >1000). If the company has less than 50 employees it is defined as SMALL and takes the value 1. If the company has between 51 and 250 employees it is defined as MEDIUM and takes the value 2. And if the company has more than 250 employees it is defined as LARGE and takes the value 3;
- DMAN is the type of main operation the company is engaged in. It is a dummy variable taking value 0 if the company is a non-manufacturing one NMAN, and value 1 if the company is a manufacturing one MAN;

- DSECTOR is the type of ownership of the company. It is a dummy variable. If it is a public company PUB it takes the value 0 and if it is a private company PRIV it takes the value 1;
- DLIST presents if the company is listed at the Macedonian stock exchange. It is a dummy variable which takes the value 0 if the company is not listed NLIST at the stock exchange and it takes the value 1 if the company is listed LIST at the Macedonian stock exchange;
- PROFIT is the profitability of the company measured by the return on assets ratio (ROA) across five categories, (<0, 0%-20%, 20%-50%, 50%-70%, >70%). If ROA is negative the company is defined as not profitable NPROFIT and takes the value 1. If the ROA is up to 20% the company is defined as low profitable LPROFIT and takes the value 2, and if the ROA is more than 20% the company is defined as high profitable HPROFIT and takes the value 3;
- DLEV is a dummy variable representing the total debt-to-assets ratio measured across four categories (<25%, 25%-50%, 50%-75%, >75%). If the leverage of the company is up to 25% the company is defined as having low leverage LLEV and takes the value 0. If leverage is more than 25% the company is defined as having high leverage HLEV and takes the value 1;
- DFSALES is the proportion of foreign sales measured across four categories (0%, 1-25%, 25%-50%, >50%). It is a dummy variable which takes the value 0 if the company has no foreign sales NFSALES. If the company has foreign sales FSALES it takes the value 1;
- DCASH is the availability of cash, the cash balance of the company. It is a dummy variable. If the company has a negative cash balance NCASH it takes the value 0. If the company has a positive cash balance PCASH it takes the value 1;
- DCFOAGE is a dummy variable, the chief financial officer's age measured across four categories (<30, 30-40, 40-50, >50). If the CFO is less than 40 years, he/she is defined as YOUNG and takes the value 0. If the CFO is more than 50 years old, he/she is defined as OLD and takes the value 1;
- DCFOEDU is the level of education of the CFO measured across four categories (less than bachelor, bachelor, master's degree, higher than postgraduate). It is a dummy variable. If the CFO has a bachelor degree or less, he/she is defined as not highly educated NHEDU and takes the value 0. If the CFO has master degree or higher education, he/she is defined as highly educated HEDU and takes the value 1;
- DCFOTEN is a dummy variable which reflects how long the CFO has that position in the company and is measured across three categories (less than 4 years, 4-9 years, more than 9 years). If the CFO is in the position for less than 9 years, he/she is defined as having short tenure STEN and takes the value 0. If the CFO is in the position more than 9 years, he/she is defined as having long tenure LTEN and takes the value 1.

Based on the results calculated by the regression analysis, the relationship between each independent variable and the technique of capital budgeting selected by Macedonian companies is analyzed and discussed.

4 RESULTS AND FINDINGS

4.1 Descriptive Data Analysis

The descriptive analysis on the main characteristics of the total of 64 companies in our sample is represented in Table 1. Information regarding type of main operation, industry classification, sector, listing on the stock exchange, employees, years the company is in operation, profitability, leverage, foreign sales and cash balance is summarized.

Among the researched companies, 52% or above half are manufacturing companies while the other 48% are non-manufacturing companies. Companies listed at the Macedonian stock exchange also constitute 52% of the sample whereas the rest 48% are not listed. According to the sector the majority of the sample 75%, are private companies and the rest, 25% are public companies. Regarding their industry classification, the dominant categories are Manufacturing (31%), followed by Wholesale trade (16%), Agriculture, forestry and fishing (14%) and Services (13%). Other industries represented in the sample are Transportation and public utilities (8%), Construction (5%), Retail trade (5%), Finance, insurance and real estate services (5%) and Public administration (5%). Within the sample 44% of the Macedonian companies have been in operation for more than 20 years, and 29% have been established for less than 10 years. The company size is measured by the number of employees. It needs to be emphasized that there is not a big difference in the proportion of small and large companies, 39% and 38% respectively. The rest are medium sized companies with 51 to 250 employees. In the research sample about half of the companies, 52%, fit into the category of high profitability (expressed through ROA) and the rest in low profitability. As regards the total debt to asset ratio, the majority of companies (59%) are low leveraged companies, with a leverage ratio of less than 25%. Companies with any percent of sales abroad constitute more than a half or 59% of the research sample, whereas companies with no foreign sales at all constitute 41%. Finally, according to their cash balance, 97% have a positive cash balance and just 2 out of 64 companies have a negative cash balance.

Chief financial officer's characteristics are summarized in the following figures. Figure 1 illustrates their profiles according to their age. The CFO's are categorized as young when aged up to 40 years and they constitute 49% of the research sample. The ones older than 40 years fit in the category of old CFO's and constitute 51% of the sample.

Table.1. Companies Demographics

Company characteristics	Number	%
Type of main operation:		
Manufacturing	33	52%
Nonmanufacturing	31	48%
Sector:		
Public	16	25%
Private	48	75%
Listed on the Macedonian stock exchange		
Listed	33	52%
Non-listed	31	48%
Industry		
Agriculture, forestry, fishing	9	14%
Mining	0	0%
Construction	3	5%
Manufacturing	20	31%
Transportation and public utilities	5	8%
Wholesale trade	10	16%
Retail trade	3	5%
Finance, insurance, real estate	3	5%
Services	8	13%
Public administration	3	5%
Years of operation		
<2	1	2%
2-5	7	11%
5-10	10	16%
10-20	18	28%
>20	28	44%
Employees		
<10	5	8%
11-50	20	31%
51-250	15	23%
251-1000	14	22%
>1000	10	16%

(table continues)

(continued)

Profitability (ROA)		
Negative	2	3%
<20%	29	45%
20%-50%	20	31%
50%-70%	8	13%
>70%	5	8%
Foreign sales		
0%	26	41%
1%-25%	11	17%
25%-50%	12	19%
>50%	15	23%
Leverage		
<25%	38	59%
25%-50%	18	28%
50%-75%	7	11%
>75%	1	2%
Cash balance		
Positive	62	97%
Negative	2	3%

Figure 1. Graphic Representation of CFOs Profile According to Their Age (N=64)

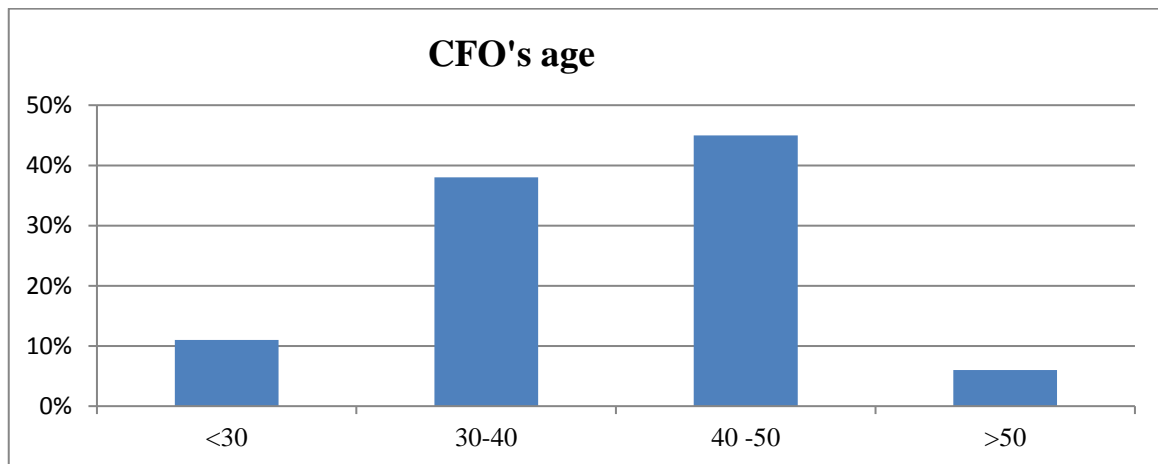


Figure 2. Graphic Representation of CFOs Characteristic: Educational Background (N=64)

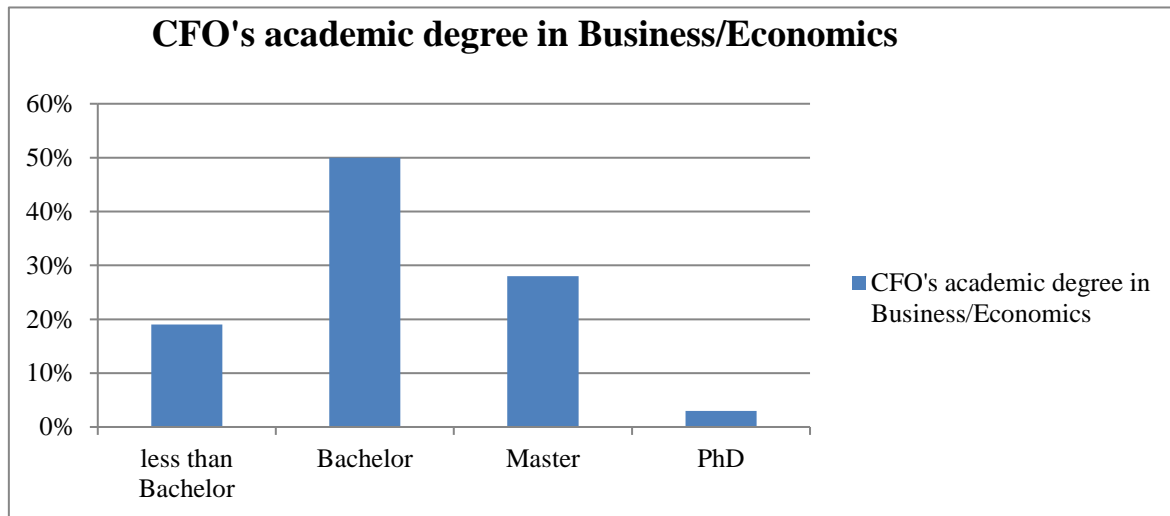


Figure 3. Graphic Representation of CFOs Tenure (N=64)

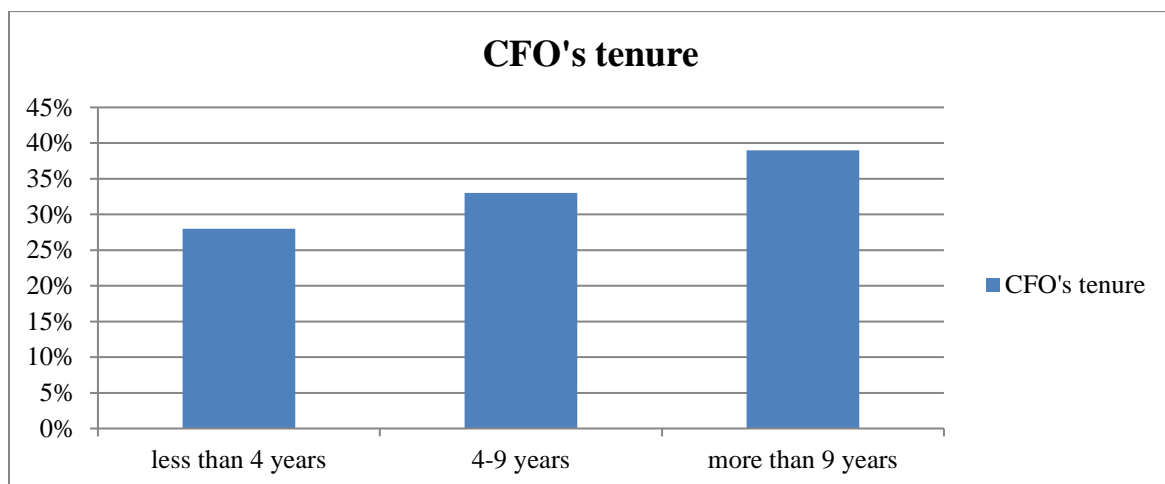
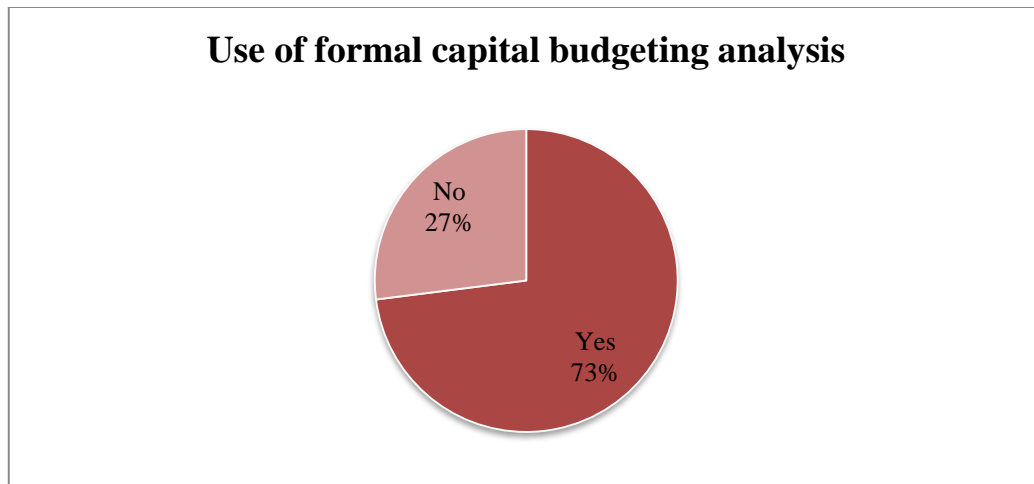


Figure 2 shows CFOs' educational background. The majority of the respondents, 50% are with a bachelor degree. 28% hold a master academic degree in business/economics. With an academic degree higher than master e.g. PhD, are only 3% of the CFO's, while less than bachelor or not highly educated CFOs constitute 19% of the sample. As regards the time in their positions which is showed in Figure 3, 39% had been working more than 9 years in the company. 33% of the CFO's have a shorter tenure from 4 to 9 years and 28% have been working in the company less than 4 years.

4.2 Results and Interpretation of Findings

The survey results of the usage of any formal capital budgeting analysis when making investments is illustrated in figure 4. It indicates that the majority, 73% of the CFOs conduct formal capital budgeting analysis while 27% of the respondents do not make use of even one appraisal technique when making investment decisions.

Figure 4. Total use of CBT by Macedonian Companies When Making Investments (N=63)



An overview of financial manager's answers to the question regarding the frequency of use of CBT is presented on a scale of five levels in Table 2. The summary of the results indicates that PBP and PI are the most favored techniques among managers in our research sample. PBP is always or often used by 63% of the companies and PI by 50%. The theoretically more sophisticated techniques IRR and NPV follow in preference after these two techniques. They are always and often used by 38% and 33% of the companies respectively. But if only always is taken in account then IRR and NPV trail PI in preference. The internal rate of return technique is always used by 19% of the respondents and NPV by 16%, while PI by 11%. NPV and IRR are closely followed by the technique AAR which is always and often used by 30% of the sample. Considered superior to IRR according to academic theory, MIRR technique is favored by a small percentage of Macedonian companies. Only 10% of the respondents use this technique always or often. The least favored and used technique is DPBP. Only 8% of the financial managers reported utilizing this technique always or often, while 28% of the companies make the usage of it occasionally.

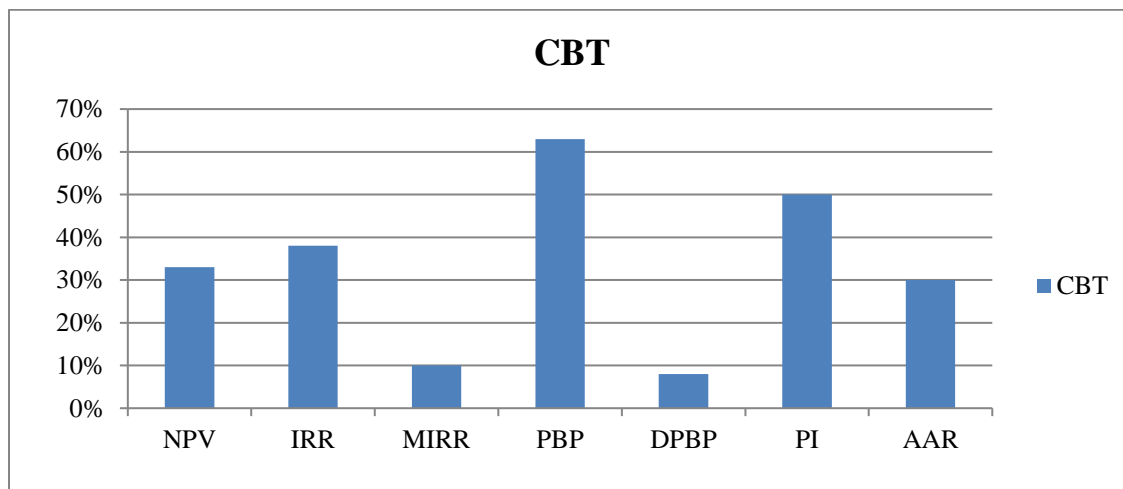
An important aspect of this research study is that on average only 27% of the sample companies use the theoretically sophisticated CBT in one form or another. The results are

not in congruence with the financial literature. Not sophisticated non discounted techniques PB, PI and AAR are still rigorously used. These results are also illustrated in figure 5.

Table 2. Frequency of Use of Each CBT by Macedonian Companies

CBT	CBT	Frequency of use of the technique				
		Never	Rarely	Occasionall y	Often	Always
	NPV	11 (17%)	12(19%)	20 (31%)	11 (17%)	10 (16%)
	IRR	12(19%)	13(20%)	15 (23%)	12 (19%)	12 (19%)
	MIRR	26(41%)	24(38%)	8 (13%)	5 (8%)	1 (2%)
	PBP	7(11%)	6(9%)	11 (17%)	17 (27%)	23 (36%)
	DPBP	15(23%)	26(41%)	18 (28%)	4 (6%)	1 (2%)
	PI	8(13%)	13(20%)	11 (17%)	25 (39%)	7 (11%)
	AAR	11(17%)	15 (23%)	19 (30%)	17 (27%)	2 (3%)

Figure 5. Graphic Representation of the Frequency of Use of CBT (N=64)



This research study also reveals from the questionnaire that most companies do not plan to change the investment appraisal techniques in the near future. They consider the techniques they use when making investment decisions as appropriate and suitable. In this paragraph, we make a comparison of capital budgeting practices in Macedonian companies with the previous findings of Brounen et al. (2004) and Wnukpel (2015) for companies in U.K., France, Germany, Netherlands and Poland. To make comparison easy, table 3 shows the data of the frequency of use CBT in the six countries. The data refers to percentages that answered 'always' and 'often'.

Table 3. The Stated Use of Different CBT ‘Always’ and ‘Often’, in Macedonian and Continental European Companies Presented in Percentages.

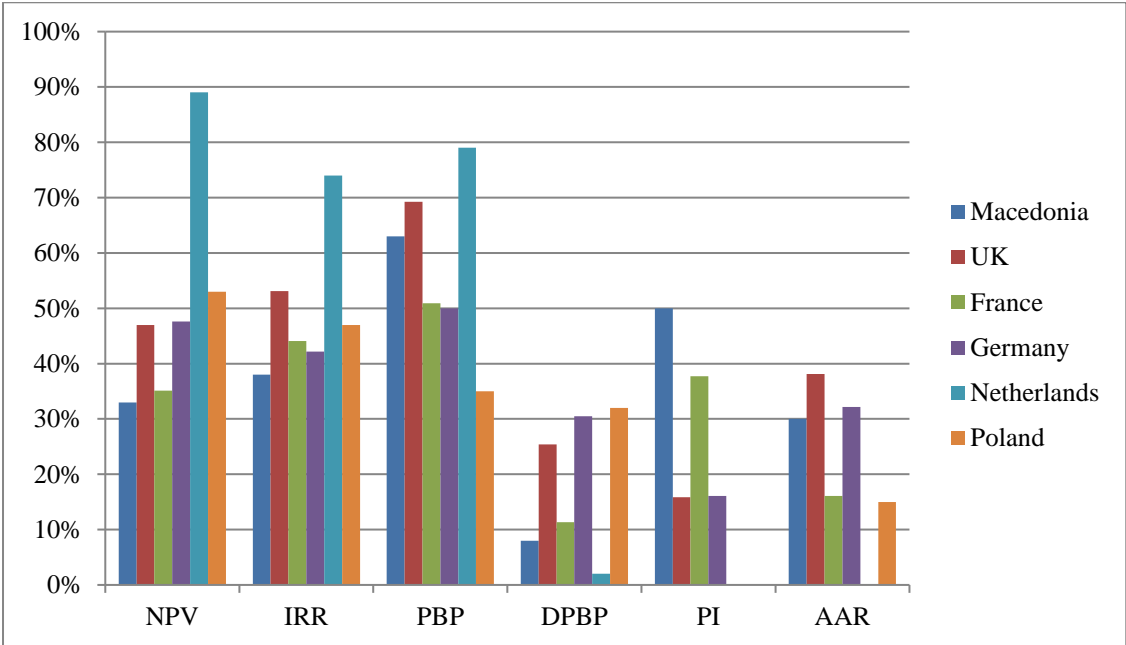
Technique used	Macedonia	U.K	France	Germany	Netherlands	Poland
NPV	33%	46.97%	35.09%	47.58%	89%	53%
IRR	38%	53.13%	44.07%	42.15%	74%	47%
PBP	63%	69.23%	50.88%	50%	79%	35%
DPBP	8%	25.40%	11.32%	30.51%	2%	32%
PI	50%	15.87%	37.74%	16.07%	-	-
AAR	30%	38.10%	16.07%	32.17%	-	15%

If we compare the results from our survey with the surveys conducted in the five European countries we can see that there is some similarity between the findings. The payback period technique is the most frequently used investment appraisal technique in all the investigated countries apart from Netherland and Poland. In the U.K., France and Germany respectively 69.2%, 50.9% and 50% of CFOs use the payback period as their favorite tool. The PBP technique is immediately followed by NPV and IRR, unlike Macedonian companies whose second most used technique is PI. These countries tend to use discounted cash flow techniques in the evaluation of investment projects. IRR is the second most used technique in the U.K, and France while in Germany the NPV trails the IRR in preference. In Netherlands and Poland the DCF techniques are preferred when making investment decisions. The most used technique in these two countries is the NPV, closely followed by IRR in Poland and PBP in Netherlands.

Several trends emerge from examining Table 3. Continental European companies heavily use discounted cash-flow techniques when analyzing investments. In the U.K., France, Germany, Netherlands and Poland respectively 47%, 35%, 47.6%, 89% and 53% of the CFOs use the NPV while 53.1%, 44%, 42.2%, 74% and 47% of the CFOs of these countries rely on the IRR technique. Macedonian companies on the other hand tend to use them to a lesser extent. They make substantially greater use of non discounted cash flow techniques like PBP, PI and AAR. PI is not much preferred in the Continental European countries. Companies in Poland and Netherlands don't make usage of this technique at all. AAR is used to some extent in all countries except Netherlands. It is mostly used in the U.K., (38%) and Germany (32.2%). DPBP which is among the least preferred techniques in Macedonian companies is used by 32% of the CFOs in Poland and by 30.5% in Germany. The other European countries use this technique in smaller percentages. There are no previous findings about the use of MIRR in Continental European countries, so a comparison with this technique is not possible. Concerning the usage vs. non usage of the techniques, there are previous findings only for companies in Poland (Wnukpel, 2015).

15% of the CFOs in Poland do not use any of the CBT in the investment decision process. Figure 6 illustrates the usage of techniques by Macedonian companies compared to Continental European results. The study results support Hypothesis 1. The larger part of the Macedonian companies use capital budgeting techniques, but compared to Poland (15%), 27% of the CFOs in Macedonian companies do not use the techniques at all. This means that the extend usage of CBT in Macedonia is less than in more developed European countries. Also the extend usage of more sophisticated techniques is smaller in Macedonia than in Continental European countries. Altogether the research shows that Macedonian companies still tend to use techniques which are not sophisticated and recommended by financial literature.

Figure 6. Capital Budgeting Techniques: Macedonia vs. EU Companies



To assess the relative influence and effects of the individual independent variables in predicting the use of CBT, an ordinal regression analysis is executed in SPSS. Table 4 exhibits the results of the effect company and CFO characteristics have on the capital budgeting technique selection and how well the selection is predicted by them. To test hypothesis 2 and 3, multivariate ordered profit regression coefficients and the p-values are illustrated in Table 4. The dependent variable is the frequency of use of each technique (in rows) and the independent variables are the company’s and CFO’s characteristics (in columns). The coefficients presented are for the lower coded categories of the independent variables. Pseudo R2 is also calculated as it indices how well the predictor variable in the regression analysis predicts the criterion variable.

We find that the NPV technique is mostly influenced by the level of education of the CFO with a highest coefficient of -0.886 and statistical significance of $p=0.014$. This means that less educated managers use NPV less frequently than highly educated managers. The type of main operation of the company shows also a significant relationship with this technique, with a coefficient of -0.707 ($p=0.031$). This means that non-manufacturing companies use NPV less frequently than manufacturing ones. Other company and CFO characteristics do not significantly influence this technique selection. The same independent variables explain the use of the IRR and MIRR technique. The type of main operation as the only company characteristic influencing the selection of these two techniques is represented with coefficients of -1.027 ($p=0.002$) and -0.586 ($p=0.025$). This means that non-manufacturing companies use IRR and MIRR less frequently than manufacturing companies.

CFO education does strongly influence the adoption of IRR and MIRR with the coefficient of -1.410 ($p=0.000$) and -0.826 ($p=0.004$) respectively. These coefficients indicate that less educated CFOs use IRR and MIRR less often than highly educated CFOs. Another CFO feature which shows a significant relationship with IRR is CFOs age with a coefficient of 0.665 ($p=0.046$). This means that young managers use IRR less frequently than older managers. From this we can conclude that non-manufacturing companies and companies with not highly educated CFO's use NPV, IRR and MIRR less than manufacturing companies and companies with highly educated CFOs. Also young CFOs use the IRR technique less often than old CFOs. The adoption of the techniques PBP and DPBP is influenced only by the type of main activity. This independent variable is strongly associated with PBP and DPBP with the coefficients of -1.108 ($p=0.003$) and -0.590 ($p=0.027$) respectively.

So we find that non-manufacturing companies use these two techniques less than manufacturing ones. As PI is concerned we find that type of main activity and CFOs age, do significantly influence the use of this technique. These variables have a negative relationship with PI with significant coefficients of -1.028 ($p=0.003$) for type of main activity and -0.791 ($p=0.025$) for CFOs age. This means that non-manufacturing companies and companies with young CFOs use this technique less often than manufacturing companies and companies with old CFOs. In the case of AAR three independent variables are statistically significant. From the company characteristics, the type of main activity and leverage are negatively and significantly associated with the use of this technique with the coefficients -0.764 ($p=0.012$), and -0.620 ($p=0.043$) respectively. This result indicates that non-manufacturing and low levered companies use AAR less often than manufacturing and high levered companies. The third predictable variable of AAR is CFO's age, which is also negatively associated with the use of the technique with

the coefficient of -0.640 ($p=0.042$). This means that younger CFO's use this technique less often than older CFO's.

In accordance with hypothesis 2 the research shows that company's type of main operation as a predictable variable has got a significant influence on all seven CBT. The relationship between the usage of the techniques and the non-manufacturing companies is negative. This indicates that manufacturing companies generally use the CBT more often than non-manufacturing ones. This finding is in line with the previous study of Daunfeldt and Hartwig, 2011. As other company's characteristics are concerned the type of sector does influence the use of all CBT except AAR. From the table we can see a positive relationship between public companies and the use of the techniques which means that public companies use these CBT more often than private companies, but contradictory to hypothesis 2 the relationships are not statistically significant. Also whether the company is listed on the stock exchange or not influences the choice of some CBT. The results from the table show a negative relationship between unlisted companies and NPV, IRR and MIRR.

This indicates that listed companies are positively associated with the use of these more sophisticated techniques and make use of them more often than unlisted ones. This finding is in agreement with the previous studies of Brounen et al., 2004, and Hermes et al., 2007, but the relationship is not statistically significant. Contradictory to hypothesis 2, this study indicates that size does not have a significant association with the usage of CBT. This result is in disagreement to previous studies (Ahmed, 2013; Bennouna et al., 2010; Brounen et al., 2004; Daunfeldt & Hartwig, 2011; Graham & Harvey, 2001; Sandahl & Sjögren, 2003) which proved a significant relation between size and the use of CBT. An exception is the finding of Brounen et al. (2004) who found no significant relationship between size and the PBP technique in any of the four European countries: Germany, France, UK and Netherlands. Leverage as a predicting variable influences positively the utilization of NPV, IRR, MIRR and PBP by low levered companies which means that low levered companies use these techniques more often than high levered companies. PI, AAR and DPBP are negatively related to low levered companies. This indicates that high levered companies make use of these techniques more often, but only the relationship between AAR and leverage is statistically significant.

From this, we can conclude that high levered companies have a tendency to use AAR more extensively than low levered companies do. For the other company characteristics as profitability, foreign sales and cash balance, the relationships are not statistically significant meaning that the effect is not statistically confirmed. Concerning the CFO's characteristics, in accordance with hypothesis 3 the results suggest a significant relationship between CFO education and the use of the techniques NPV, IRR and MIRR. Highly educated CFOs use these sophisticated techniques more frequently than less

educated CFOs. A significant relation between CFO education and the use of IRR has also been found in Germany, France and Netherlands (Brounen et al., 2001) and in the United States (Graham & Harvey, 2001) which indicate that having an MBA encourages the use of DCF techniques. CFO's age has also a significant effect on the frequency of use of the techniques IRR, PI and AAR. The negative coefficients indicate that younger CFOs use these CBT less often than older CFOs. As CFO's tenure is concerned, this independent variable has got a negative association with the techniques NPV, IRR and AAR. This means that CFOs with a short tenure in the companies use these techniques less often than CFOs with a long tenure. However the relations are not statistically significant which is contradictory to hypothesis 3. The percentage of the CBT variation explained by company and CFOs characteristics is also presented in Table 4. The regression equation best explains the influence of the factors type of main operation and CFO education on the selection of the techniques IRR and NPV. IRR use is in 48.7% explained by the model ($R^2=0.487$) and NPV use in 38.2% ($R^2=0.382$). The regression equation of the selection of MIRR indicates that 33.1% of the variance is accounted by the relationship with the statistically significant independent variables, while the use of AAR is explained in 30.8%. The other three techniques PBP, DPBP and PI are explained by the model in less than 30%.

Table 4. Ordinal Regression Model Results with Coefficients Presented for the Low Coded Variables

	R ²	MAN	SECTOR	LIST	SIZE	PROFIT	FSALES	LEV	CASH	CFOAGE	CFOEDU	CFOTEN
NPV	0.382	-0.707	0.065	-0.215	0.619	0.751	-0.283	0.354	-0.498	-0.594	-0.886	-0.001
p-value		0.031	0.906	0.659	0.166	0.486	0.508	0.282	0.656	0.082	0.014	0.997
IRR	0.487	-1.027	0.236	-0.053	0.129	0.636	-0.086	0.043	0.132	-0.665	-1.410	-0.124
p-value		0.002	0.658	0.910	0.763	0.543	0.835	0.891	0.903	0.046	0.000	0.752
MIRR	0.331	-0.586	0.207	-0.159	0.251	-0.460	-0.018	0.114	0.764	-0.171	-0.826	0.026
p-value		0.025	0.636	0.681	0.477	0.592	0.958	0.661	0.391	0.526	0.004	0.928

Overall considering the factors that influence the selection of CBT in Macedonian companies we can see that the most powerful factor is the type of main operation of the company. This variable has got significant coefficients with all seven CBT. Generally manufacturing companies use CBT more often than non-manufacturing ones. The most influencing CFO characteristics are the education of the CFO and age. From the regression analysis we can see that highly educated CFOs tend to use sophisticated capital budgeting techniques like NPV, IRR and MIRR more often than CFOs with a lower level of

education. Regarding the age the results show that older CFOs tend to use IRR and not sophisticated techniques AAR and PI more extensively than younger CFOs.

Table 4. Ordinal Regression Model Results with Coefficients Presented for the Low Coded Variables

	R ²	MAN	SECTOR	LIST	SIZE	PROFIT	FSALES	LEV	CASH	CFOAGE	CFOEDU	CFOTEN
PBP	0.283	-1.108	0.969	0.479	0.114	-0.336	-0.400	0.010	-0.525	-0.682	-0.310	0.039
p-value		0.003	0.117	0.379	0.816	0.779	0.402	0.977	0.673	0.074	0.426	0.922
DPBP	0.210	-0.590	0.108	0.573	-0.241	-0.800	0.414	-0.103	1.569	-0.442	-0.181	0.202
p-value		0.027	0.808	0.151	0.502	0.361	0.235	0.699	0.087	0.110	0.523	0.493
PI	0.285	-1.028	0.246	0.345	0.049	0.059	0.099	-0.089	0.776	-0.791	0.280	0.028
p-value		0.003	0.661	0.490	0.913	0.957	0.820	0.791	0.497	0.025	0.433	0.939
AAR	0.308	-0.764	-0.095	0.161	0.147	-0.144	0.187	-0.620	1.541	-0.640	0.342	-0.191
p-value		0.012	0.851	0.719	0.716	0.884	0.632	0.043	0.136	0.042	0.286	0.566

CONCLUSION

In today's world of cutting edge technology and changing global market conditions companies are confronted with uncertainty and numerous challenges when making investment decisions. Emerging markets in developing countries like Macedonia are with less mature capital markets, small market capitalization and lower per capita income compared with developed countries. Therefore emerging market economies face bigger challenges when applying capital budgeting practices. There is a widespread interest whether companies apply capital budgeting techniques recommended by academic literature. The results from a wide range of research indicate that new capital budgeting techniques are accumulated slowly compared to the rapid pace with which other innovations are adopted by companies and that CFOs tend to avoid abandoning old and non sophisticated capital budgeting techniques (de Andres et al., 2015). This statistical result does not vary much across countries, and the Macedonian case is not excluded.

This is the first research study on capital budgeting practices in Macedonian companies and therefore fills the gap and adds value in academic literature by introducing insights about the techniques in Macedonia. In this master thesis we examined the use of CBT in Macedonian companies and compared the results with previous similar studies of Brounen et al. (2004) and Wnukpel (2015) for European countries. Data on the use of CBT were acquired from a primary survey sent to a sample of 64 companies in Macedonia. We also analyzed what determines the usage of capital budgeting techniques in Macedonian companies. A multivariate regression analysis was conducted to establish the association between the techniques and some company and CFO characteristics.

The findings of the study revealed that the majority of Macedonian companies 73% use capital budgeting techniques when making investment decisions. The dominant techniques used 'always' or 'often' when evaluating investment projects are PBP with 63% and PI with 50%. The use of the sophisticated techniques IRR and NPV, recommended by the literature and scholars were less frequently used by the CFOs of Macedonian companies with 38% and 33% respectively. The AAR technique, not recommended by financial literature, is used by 30% of the CFOs, and the least preferred techniques in undertaking investments are MIRR and DPBP. The survey results show that on average only 27% of the sample companies use the sophisticated and recommended CBT. This behavior of Macedonian companies is not in line with financial theory which recommends the usage of sophisticated CBT that take time value of money in account.

There are several possible reasons for this gap between theory and practice in Macedonian companies. Imperfect and inefficient capital markets in Macedonia might be attributed to the less frequent usage of DCF techniques, which in such circumstances are costly to apply. Another reason might be the simplicity of usage of non discounted techniques. They are easy to use and do not require particular skills. In small and medium-sized companies which are numerous in Macedonia, it frequently happens that managers without any financial or economic educational background are involved in the investment-decision making process. It is also very likely that they are not familiar with these techniques. As a consequence they have a lack of knowledge and fail to apply sophisticated capital budgeting techniques. This shortage of well-qualified and trained managers who prepare the investment decisions as well as the high ratio of small companies might also be an explanation for the popularity and frequent application of non discounted capital budgeting techniques. There may be also other factors that discourage managers to replace techniques which are theoretically outdated with new more sophisticated ones, for instance the distrust of the CFOs regarding what theory suggests as best techniques or the rooted corporate habits.

The reported usage of capital budgeting techniques in Macedonian companies was compared to five Continental European studies. In Poland 15% of the sample companies do not use any capital budgeting technique while in Macedonia the percentage is 27%. This result indicates that the usage of CBT in Macedonia is less extensively than in Poland. Regarding the frequency of the usage of each technique there is a similarity in the results with U.K., France and Germany where PBP is also the most used appraisal technique. But unlike Macedonia the second most used are the sophisticated techniques NPV and IRR. Companies in Netherland and Poland make the usage of the NPV technique most frequently, followed closely by IRR and PBP. Generally these five European countries use DCF techniques heavily when making investment decisions while Macedonian companies still rigorously use not recommended CBT. This result shows that Macedonian companies

employ sophisticated capital budgeting techniques to a lesser extent than companies in Continental European countries. The differences in capital budgeting practices between these countries might be due to the higher level of economic development, financial and human capital developments in Continental European countries as well as the diversity in institutional systems and differences in company's culture. In conclusion, we can support hypothesis one that the overall use of capital budgeting techniques is less extensive in Macedonia than in Continental Europe.

In order to identify the factors, company characteristics and CFOs features which determine the usage of capital budgeting techniques, a multivariate regression model was conducted. Influence on the use of CBT of the type of main operation was shown for all seven techniques. Manufacturing companies use all CBT more often than non-manufacturing ones. Another company specific variable which has got an influence on the choice of CBT is the leverage level of the company. This variable is though only associated with the technique AAR. High levered companies use this non-sophisticated technique more often than low levered companies. Although previous studies found a positive association between company size and the usage of capital budgeting techniques, this research study has not found such a relationship. Also the other company specific variables, sector, listed at the stock exchange, profit, foreign sales and cash are not significantly related to any technique. The latter confirms partly our hypothesis 2: company characteristics such as size, type of main operation, sector, listed at the stock exchange, profitability, leverage, foreign sales and availability of cash are positively correlated with the frequency of CBT selection. Rather CFOs features, educational background and age, influence the choice of capital budgeting techniques. The degree of capital budgeting sophistication is evidently higher in companies with highly educated CFOs. Our findings indicate that the proportion of CFOs preferring sophisticated DCF techniques is higher when the educational background of the CFO is higher. They prefer to use NPV, IRR and MIRR to a larger extent in comparison with less educated CFOs. CFOs age as a factor shows significant influence on the usage of the techniques IRR, PI and AAR. There are fundamental differences between younger and older CFOs when making investment decisions. Older CFOs are more inclined to use the sophisticated technique IRR and the non-sophisticated techniques PI and AAR, than the younger ones. Our hypothesis 3 is also partly verified: CFOs features like age, educational background and tenure are positively correlated with the frequency of CBT selection.

Interestingly, the non-sophisticated payback period technique emerged as the most preferred technique irrespective of the type of main operation of the company, CFOs educational background or any other company and CFOs characteristic. The dominance of this technique may be attributable to its practical utility and simplicity as well as its increased emphasis on liquidity and risk. Presumably, there may be also other possible

reasons and peculiarities behind the preference in usage of this technique, like mentioned before, the lack of knowledge and skills - shortage of well qualified managers, established and rooted corporate habits and the financial managers mistrust regarding what are the best capital budgeting techniques according to theory.

CONTRIBUTION AND LIMITATIONS

This research study represents a step forward by describing the area of capital budgeting in Macedonian companies. It is a significant input to the existing knowledge in the field of global capital budgeting in general and the Macedonian case in particular. The results of the conducted research study have implications for corporate practitioners, theoreticians, researchers, investors and all other stakeholders. They have got both academic and empirical significance. From the theoretical point of view, the research points out the CBT used by Macedonian companies and the factors that influence their choice. Companies operating in Macedonia apply the same CBT as companies in more developed European countries but with different preferences, and the extent of usage is smaller compared to these countries. In terms of factors influencing the choice of capital budgeting technique this research explored eleven potential factors. Compared to other similar studies, this is a large number of factors taken into consideration.

From the practical point of view, the results suggest financial managers in Macedonia to identify specific areas in their companies where capital budgeting techniques used are far from academic recommendations and to consider modification and implementation of new techniques. The implementation of new more sophisticated techniques that are commonly employed by companies in more developed countries could be very beneficial for the Macedonian companies. The wider diffusion of CBT and the usage of more sophisticated techniques could facilitate activities which create and maximize the value of the company. They could improve the effectiveness of investment decision-making and positively influence the competitiveness and success of the company (Wnuk-pel, 2015). The conclusions derived from this study are also of importance to investors, so they have an overview of the capital budgeting techniques used among business companies in Macedonia and the factors that determine their selection.

The research study has got several limitations to be considered. It does not measure the actual use of CBT, only the reported. Rather the beliefs of managers than the actions. The respondents might not answer truthfully, so we cannot be sure about which techniques and how they are actually used. However, we consider this concern as minimal because of the anonymity of the survey and because of the trustworthiness of the data we got from the managers through phone conversations. CFOs would not take their time to answer surveys by phone if they intend to be untruthful. Another potential issue with the survey data is that

some of the terminology may lower the reliability due to not properly understanding or misinterpretation by the respondents, no matter how carefully the questions are formulated. Another possible limitation of the study is the non-response bias in the survey results because of the low response rate. It was a challenge to reach out to the financial managers. Most of them were reluctant to disclose information due to the fear of maybe leaking the information to competitors or using it against them. The last potential limitation to be mentioned is that this kind of research does not allow an in-depth analysis of the capital budgeting practices in a way a research with a case study can do. The use of a case study method enables more in-depth analysis including more aspects of the capital budgeting practices like the whole investment selection process, the appraisal techniques, the realization and finally controlling. This could be an area of research to be explored.

This study is a springboard for future research. The research findings and conclusions provide a useful platform to academicians to clarify the reasons behind the discrepancy in theory and practice. Future researchers can focus on exploring the factors that have influence on the great popularity of the PBP technique in Macedonian companies. Another opportunity for future research is exploring factors left out of the scope of this study, which might influence the choice of CBT and have got the merit to be explored. One of them might be the company's life cycle stage. Companies at growth or maturity stages are more likely to use sophisticated CBT than the early stage companies. Other factors that can be considered are external factors like the economic policies of the country, the technological factor, political factors etc. Research on the estimation of the capital cost which is a vital input in capital budgeting techniques is also worth exploring. As capital budgeting practices may differ from one type of investment to another and from industry to industry, an interesting question that needs to be well investigated is whether the sophisticated CBT are significant to all kinds of investment (expansion, mergers etc.) and outperform the non sophisticated techniques in all type of industries.

Nevertheless, being cognizant of these limitations, the research study enables a rich and comprehensive examination of capital budgeting techniques in Macedonian companies, an analysis of factors determining their selection and comparisons with similar studies done in other more developed countries.

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APPENDICES

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Appendix A: Abstract

Povzetek

Podjetniško finančno upravljanje se ukvarja s finančnimi, naložbenimi in dividendnimi odločitvami podjetja s splošnim ciljem povečanja bogastva delničarjev. Investicijska odločitev je operacija, ki pomeni, da družba učinkovito vlaga svoja trenutna finančna sredstva v dolgoročne donosne projekte. Tehnike kapitalskega proračuna se uporabljajo v večini podjetij za vrednotenje naložbenih projektov. Opredelitev, ki sta jo navedla Brewer, Garrison in Noreen (2011), opisuje kapitalski proračun kot naložbeno analizo, ki so jo pripravili finančni menedžerji, da bi ugotovili, katera naložbena priložnost med razpoložljivimi ima najboljši donos prihodnjega denarnega toka.

Raziskava se osredotoča na proučevanje dokazov o formalni uporabi znanih tehnik ocenjevanja v makedonskih podjetjih, dejavnikih, ki so povezani z njihovo izbiro in če obstaja razlika med teorijo in prakso. Temelj te študije je primarna raziskava finančnih menedžerjev v makedonskih podjetjih. Razmerje med enajstimi neodvisnimi spremenljivkami, nekaterimi značilnostmi podjetja in CFO in odvisno spremenljivko, uporabljeno tehniko kapitalskega proračuna, se analizirajo z analizo večkratne regresije.

Ugotovitve študije so pokazale, da večina makedonskih družb 73% pri odločanju o naložbah uporablja tehnike kapitalskega proračuna. Prevladujoča tehnika je PBP s 63% in PI s 50%. Uporaba sofisticiranih tehnik IRR in NPV, ki jih priporoča literatura in znanstveniki, se redkeje uporablja. Najbolj prednostne tehnike so AAR, MIRR in DPBP. V povprečju samo 27% vzorčnih podjetij uporablja prefinjeno in priporočeno CBT, kar ni v skladu s finančno teorijo.

Ugotovljena uporaba CBT v makedonskih podjetjih je bila primerjana s petimi kontinentalnimi evropskimi študijami. Podobnost je v rezultatih z U.K., Francijo in Nemčijo, kjer je PBP tudi najbolj uporabljena tehnika. Na splošno pa evropske države uporabljajo vse tehnike in tehnike DCF bolj obširno kot makedonske družbe.

Statistično pomemben vpliv na uporabo CBT imajo dejavniki: vrsta glavnega poslovanja za vseh sedem tehnik, ki kaže, da proizvodna podjetja uporabljajo vse tehnike pogosteje kot tista podjetja, ki niso proizvodna, raven finančnega vzvoda pa le na podlagi tehnike AAR, ki kaže, da to tehniko uporabljajo pogosteje podjetja, ki imajo zaposlene z visoko stopnjo izobrazbe od podjetij z nizko stopnjo izobrazbe, izobrazba finančnega direktorja o NPV, IRR in MIRR, kaže, da visoko izobraženi finančni direktorji raje uporabljajo te tehnike v večjem obsegu kot manj izobraženi finančni direktorji in da CFO-ji uporabljajo tehnike IRR, PI in AAR, kar pomeni, da so starejši CFO bolj nagnjeni k uporabi teh tehnik kot mlajši. Druge značilnosti podjetja in CFO niso pokazale pomembne povezave z uporabo tehnik kapitalskega načrtovanja.

Appendix B: Questionnaire

QUESTIONNAIRE

I. COMPANY CHARACTERISTICS:

- 1.1. Type of main operation:
 - a) Manufacturing
 - b) Non-manufacturing

- 1.2. Sector:
 - a) Private
 - b) Public

- 1.3. Is your company listed at the Macedonian stock exchange?
 - a) Yes
 - b) No

- 1.4. Type of main industry classification:
 - a) agriculture, forestry, fishing
 - b) mining
 - c) construction
 - d) manufacturing
 - e) transportation and public utilities
 - f) wholesale trade
 - g) retail trade
 - h) finance, insurance, real estate
 - i) services
 - j) public administration

- 1.5. How many years is your company in operation?
 - a) < 2 years
 - b) 2 – 5 years
 - c) 5 – 10 years
 - d) 10 – 20 years
 - e) > 20 years

- 1.6. Employees:
 - a) < 10
 - b) 11 – 50
 - c) 51 – 250
 - d) 251 – 1000

e) > 1000

1.7. Profitability (ROA for 2016):

- a) Negative
- b) <20%
- c) 20% - 50%
- d) 50% - 70%
- e) >70%

1.8. Share of total sales abroad:

- a) 0%
- b) 1% – 25%
- c) 25% – 50%
- d) > 50%

1.9. Leverage (total debt to assets ratio) (end of 2016):

- a) <25%
- b) 25% -50%
- c) 50%- 75%
- d) >75%

1.10. Cash balance (for 2016):

- a) Positive
- b) Negative

II. CHIEF FINANCIAL OFFICER CHARACTERISTICS

2.1. Chief Financial Officer's age:

- a) < 30 years
- b) 30 – 40 years
- c) 40 – 50 years
- d) > 50 years

2.2. Chief Financial Officer's academic degree in business/economics:

- a) Less than bachelor
- b) Bachelor
- c) Master's degree
- d) Higher than postgraduate (e.g.PhD)

2.3. Chief Financial Officer has been on the Board of Your Company:

- a) Less than 4 years

- b) 4 – 9 years
- c) More than 9 years

III. USE OF CAPITAL BUDGETING PRACTICES

- 3.1. Do you make any formal (written, based on quantitative data) capital budgeting analyses?
- a) Yes
 - b) No

- 3.2. What is the minimal investment requiring formal assessment in Your Company?
- a) < 0,01 million
 - b) 0,01 – 0,1 million
 - c) 0,1 – 0,5 million
 - d) 0,5 – 1 million
 - e) 1 million

- 3.3. How frequently does your firm use the following techniques when deciding which projects or acquisitions to pursue?

	Never	Rarely	Occasionally	Often	Always
Net-present value	A	B	C	D	E
Internal rate of return	A	B	C	D	E
Modified internal rate of return	A	B	C	D	E
Pay-back	A	B	C	D	E
Discounted pay-back	A	B	C	D	E
Profitability index	A	B	C	D	E
Accounting rate of return	A	B	C	D	E

- 3.4. Do you use only one given value of cost of capital in the company, or do you use different values for the different projects? - (different projects have varying degrees of risk).
- a) One given value
 - b) Different values for different projects

- 3.5. What kind of method do you use to calculate this discount rate for the project (or for all projects of the company)?
- a. We don't calculate it directly; we use general discount rate(s).
 - b. We use the Weighted Average Cost of Capital (WACC).

- c. We use the Capital Asset Pricing Model (CAPM) to calculate the whole discount rate
 - d. Our practice is not consistent
- 3.6. Has there been a major switch in capital budgeting methods over the last 5 years in Your Company?
- a) No
 - b) Yes, and it included
- 3.7. Are investment appraisal rules likely to be changed in Your Company in near future:
- a) No, because current methods are appropriate,
 - b) No, despite the fact that current methods should be replaced by other methods,
 - c) Yes, and the changes will include

Appendix C: Results from the Questionnaire

Q1	Type of main operation:				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Manufacturing)	33	52%	52%	52%
	2 (Non-manufacturing)	31	48%	48%	100%
Valid	Valid	64	100%	100%	

Q2	Sector:				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Public)	16	25%	25%	25%
	2 (Private)	48	75%	75%	100%
Valid	Valid	64	100%	100%	

Q3	Is your company listed at the Macedonian stock exchange?				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Yes)	33	52%	52%	52%
	2 (No)	31	48%	48%	100%
Valid	Valid	64	100%	100%	

Q4	Type of main industry classification:				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Agriculture, forestry, fishing)	9	14%	14%	14%
	2 (Mining)	0	0%	0%	14%
	3 (Construction)	3	5%	5%	19%
	4 (Manufacturing)	20	31%	31%	50%
	5 (Transportation and public utilities)	5	8%	8%	58%
	6 (Wholesale trade)	10	16%	16%	73%
	7 (Retail trade)	3	5%	5%	78%
	8 (Finance, insurance, real estate)	3	5%	5%	83%
	9 (Services)	8	13%	13%	95%
	10 (Public administration)	3	5%	5%	100%
Valid	Valid	64	100%	100%	

5	Years your company is in operation:				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (< 2 years)	1	2%	2%	2%
	2 (2 – 5 years)	7	11%	11%	13%
	3 (5 – 10 years)	10	16%	16%	28%
	4 (10 – 20 years)	18	28%	28%	56%
	5 (> 20 years)	28	44%	44%	100%
Valid	Valid	64	100%	100%	

Q6	Employees:				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (< 10)	5	8%	8%	8%
	2 (11 – 50)	20	31%	31%	39%
	3 (51 – 250)	15	23%	23%	63%
	4 (251 – 1000)	14	22%	22%	84%
	5 (> 1000)	10	16%	16%	100%
Valid	Valid	64	100%	100%	

Q7	Profitability (ROA for 2016):				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Negative)	2	3%	3%	3%
	2 (<20%)	29	45%	45%	48%
	3 (20% - 50%)	20	31%	31%	80%
	4 (50% - 70%)	8	13%	13%	92%
	5 (>70%)	5	8%	8%	100%
Valid	Valid	64	100%	100%	

Q8	Share of total sales abroad:				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (0%)	26	41%	41%	41%
	2 (1% – 25%)	11	17%	17%	58%
	3 (25% – 50%)	12	19%	19%	77%
	4 (> 50%)	15	23%	23%	100%
Valid	Valid	64	100%	100%	

Q9	Leverage (total debt to assets ratio) (end of 2016):				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (<25%)	38	59%	59%	59%
	2 (25% - 50%)	18	28%	28%	88%
	3 (50% - 75%)	7	11%	11%	98%
	4 (>75%)	1	2%	2%	100%
Valid	Valid	64	100%	100%	

Q10	Cash balance (for 2016) :				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Positive)	62	97%	97%	97%
	2 (Negative)	2	3%	3%	100%
Valid	Valid	64	100%	100%	

Q11	Chief financial officer's age				
	Answers	Frequency	Percent	Valid	Cumulative
	1 (< 30 years)	7	11%	11%	11%
	2 (30 – 40 years)	24	38%	38%	48%
	3 (40 – 50 years)	29	45%	45%	94%
	4 (> 50 years)	4	6%	6%	100%
Valid	Valid	64	100%	100%	

Q12 Chief financial officer's academic degree in business/economics:					
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Less than bachelor)	12	19%	19%	19%
	2 (Bachelor)	32	50%	50%	69%
	3 (Master's degree)	18	28%	28%	97%
	4 (Higher than postgraduate (e.g. PHD))	2	3%	3%	100%
Valid	Valid	64	100%	100%	

Q13 Chief financial officer has been sitting on the board in your company:					
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Less than 4 years)	18	28%	28%	28%
	2 (4 – 9 years)	21	33%	33%	61%
	3 (More than 9 years)	25	39%	39%	100%

Q14 Do you make any formal (written, based on quantitative data) capital budgeting analyses ?					
	Answers	Frequency	Percent	Valid	Cumulative
	1 (Yes)	47	73%	75%	75%
	2 (No)	16	25%	25%	100%
Valid	Valid	63	98%	100%	
Valid	Valid	64	100%	100%	

Q15 What is the minimal investment requiring formal assessment in your company?					
	Answers	Frequency	Percent	Valid	Cumulative
	1 (< 10 000 denars)	2	3%	3%	3%
	2 (10 000 – 100 000 denars)	15	23%	23%	27%
	3 (100 000 – 500 000 denars)	18	28%	28%	55%
	4 (500 000 – 1million denars)	13	20%	20%	75%
	5 (> 1 million denars)	16	25%	25%	100%
Valid	Valid	64	100%	100%	

Q16 How frequently does your company use the following techniques when deciding which projects or acquisitions to pursue?											
	Subquestion	Answers					Valid	Units	Average	Std. deviation	
		Never	Rarely	Occasionally	Often	Always	Valid				
Q16a	Net present value	11 (17%)	12 (19%)	20 (31%)	11 (17%)	10 (16%)	64 (100%)	64	64	3.0	1.3
Q16b	Internal rate of return	12 (19%)	13 (20%)	15 (23%)	12 (19%)	12 (19%)	64 (100%)	64	64	3.0	1.4
Q16c	Modified internal rate of return	26 (41%)	24 (38%)	8 (13%)	5 (8%)	1 (2%)	64 (100%)	64	64	1.9	1.0
Q16d	Pay back period	7 (11%)	6 (9%)	11 (17%)	17 (27%)	23 (36%)	64 (100%)	64	64	3.7	1.3
Q16e	Discounted pay back period	15 (23%)	26 (41%)	18 (28%)	4 (6%)	1 (2%)	64 (100%)	64	64	2.2	0.9
Q16f	Profitability index	8 (13%)	13 (20%)	11 (17%)	25 (39%)	7 (11%)	64 (100%)	64	64	3.2	1.2
Q16g	Average accounting rate of return	11 (17%)	15 (23%)	19 (30%)	17 (27%)	2 (3%)	64 (100%)	64	64	2.8	1.1

Q17 Do you use only one given value of cost of capital in the company, or do you use different values for the different projects (different projects have varying degrees of risk)?					
	Answers	Frequency	Percent	Valid	Cumulative
	1 (One given value)	19	30%	31%	31%
	2 (Different values for different projects)	43	67%	69%	100%
Valid	Valid	62	97%	100%	

Q18 What kind of method do you use to calculate the discount rate for the project (or for all projects of the company)?					
	Answers	Frequency	Percent	Valid	Cumulative
	1 (We don't calculate it directly, we use general discount rate(s))	26	41%	43%	43%
	2 (We use the Weighted average cost of capital (WACC))	22	34%	36%	79%
	3 (We use the Capital asset pricing model (CAPM) to calculate the whole discount rate)	1	2%	2%	80%
	4 (Our practice is not consistent)	12	19%	20%	100%
Valid	Valid	61	95%	100%	

Q19_Q20 Has there been a major switch in capital budgeting methods over the last 5 years in your company?									
	Subquestion	Answers			Valid	Units	Average	Std. deviation	
		1				Valid			
Q19_Q20a	No	55 (100%)			55 (100%)	55	64	1.0	0.0
Q19_Q20b	Yes and it included	10 (100%)			10 (100%)	10	64	1.0	0.0
Q19_Q21 Has there been a major switch in capital budgeting methods over the last 5 years in your company?									
	Subquestion	Counts							

Q19_Q21a	No	
Q19_Q21b	Yes and it included	-We started using the NPV and IRR technique -The use of the CBT

Q20_Q22 Are the investment appraisal rules likely to change in your company in near future?							
	Subquestion	Answers		Valid	Units	Average	Std. deviation
		1	Valid				
Q20_Q22a	No, because current methods are appropriate	49 (100%)	49 (100%)	49	64	1.0	0.0
Q20_Q22b	No, despite the fact that current methods should be replaced by other methods	7 (100%)	7 (100%)	7	64	1.0	0.0
Q20_Q22c	Yes, and the changes will include	10 (100%)	10 (100%)	10	64	1.0	0.0

Q20_Q23 Are the investment appraisal rules likely to change in your company in near future?		
	Subquestion	Counts
Q20_Q23a	No, because current methods are appropriate	
Q20_Q23b	No, despite the fact that current methods should be replaced by other methods	
Q20_Q23c	Yes, and the changes will include	New more sophisticated techniques